Volume 61 No. 10 July 7, 2016

WISCONSIN PEST BULLETIN

Timely crop pest news, forecasts, and growing season conditions for Wisconsin

STATE OF WISCONSIN DEPARTMENT OF AGRICULTURE, TRADE AND CONSUMER PROTECTION PLANT INDUSTRY BUREAU
2811 Agriculture Dr. Madison, WI 53718 • http://pestbulletin.wisconsin.gov

WEATHER & PESTS

Summer heat and humidity returned to Wisconsin following a cool, dry Independence Day. A line of strong to severe thunderstorms developed across the southern and western areas of the state on the evening of July 5 as warm and humid air collided with a passing low pressure system, and storms developed periodically throughout the remainder of the week. The Tuesday night storms brought a swath of 45-95 mph winds that damaged trees, farm buildings and crops, with significant damage occurring in Buffalo, Dane, La Crosse, Rock, Sauk and Vernon counties. However, the rain that accompanied the storms restored declining soil moisture and benefitted summer crops, especially corn and soybeans entering the reproductive stages. The latest USDA NASS progress report continues to depict very favorable crop condition ratings, though additional rain will be critical as crops advance through reproduction.

LOOKING AHEAD

SPOTTED WING DROSOPHILA: Emergence of male and female SWD flies in Trempealeau County was confirmed by an IPM Institute specialist on June 22. UW researchers also report that flies have been captured in Dane and Door counties. Last year the first flies were collected in late June and infestations in raspberries and other fruits were prevalent by mid-July. The appearance of SWD adults should be viewed as an early warning to fruit growers to increase monitoring efforts and make preparations for possible insecticidal control. Insecticide use is not advised until SWD infestation is verified by trapping or visual inspection.

WESTERN BEAN CUTWORM: Moths are appearing in traps as far north as Wausau in Marathon County. The annual flight began during the week of June 23-29, and a total of 28 moths have been collected in Columbia, Dodge, Green Lake, La Crosse, Marathon, Marquette, Monroe, Portage and Rock counties as of July 7. Participants in the DATCP western bean cutworm trapping network are reminded to begin reporting weekly moth totals to Tracy Schilder at tracy.schilder@wisconsin.gov or by phone at (608) 224-4544.

EUROPEAN CORN BORER: Pupation of first-generation corn borers has started in the southwest and west-central areas. Black light traps could register the earliest moths of the summer flight in the week ahead. Larvae from the spring flight currently range in development from third to fifth instar. The treatment window for spring ECB larvae has closed over much of southern and central Wisconsin with the accumulation of 1,100 degree days (modified base 50°F).

APPLE MAGGOT: Adult flies were captured on traps in Fond du Lac and Sheboygan counties last week, signi-

fying the start of the adult emergence period. More frequent monitoring of red sphere and yellow sticky traps should begin at this time. The apple maggot fly is recognizable by an F-shaped wing banding pattern and a pronounced white spot on the thorax.

JAPANESE BEETLE: Significant numbers of beetles are already feeding on apples, grapes and raspberries in the southern and west-central counties. Even the smallest blemish or surface injury to fruit can attract large concentrations of this insect. Spot treatment of individual trees or cultivars may be considered for orchards and vineyards that experience high populations. Close monitoring of raspberries and other preferred plants where the beetles first appear is recommended.

BROWN MARMORATED STINK BUG: UW-Madison Extension Entomologist PJ Liesch reports that a single second-instar brown marmorated stink bug (BMSB) nymph was found in downtown Madison on July 6. This observation confirms that overwintered stink bug populations are reproducing in Dane County. BMSB probably has a single generation per year in Wisconsin depending on the temperatures, although warm early spring and summer weather could permit the development of two generations.

Brown marmorated stink bug nymph Steve Schoof NC State University

DEGREE DAYS JANUARY 1 - JULY 6

LOCATION	50°F	2015	NORM	48°F	40°F
Dubuque, IA	1306	1263	1246	1390	2138
Lone Rock	1262	1204	—	1340	2055
Beloit	1329	1260	1261	1427	2157
Sullivan	1078	960	1176	1145	1786
Madison	1218	1178	1199	1296	1978
Juneau	1071	1072	—	1145	1787
Racine	1090	878	—	1175	1827
Waukesha	1041	960	—	1106	1748
Milwaukee	1075	893	1064	1162	1800
Hartford	1039	960	—	1104	1746
Appleton	1014	998	—	1092	1712
Green Bay	983	901	1039	1069	1676
Big Flats	1135	1110	—	1236	1816
Hancock	1135	1110	1169	1236	1816
Port Edwards	1111	1071	1137	1165	1808
La Crosse	1343	1258	1318	1445	2171
Eau Claire	1184	1112	1176	1260	1945
Cumberland	907	977	1077	947	1526
Bayfield	758	703	—	792	1292
Wausau	1009	922	1055	1057	1652
Medford	919	888	958	961	1555
Crivitz	868	828	—	916	1449
Crandon	889	796	829	905	1444

Method: ModifiedB50; Sine48; ModifiedB40 as of Jan 1, 2016. NORMALS based on 30-year average daily temps, 1981-2010.

FORAGES & GRAINS

POTATO LEAFHOPPER: Counts in alfalfa are increasing but remain below established economic thresholds. Surveys conducted in Chippewa, Columbia, Dane, Dodge, Eau Claire, Jefferson, Juneau, La Crosse, Richland, Sauk and Trempealeau counties found a range of 0.1-0.9 adults and nymphs per sweep and an average of 0.3 per sweep. Nymphs are appearing in more fields, indicating a potential for populations to increase this month.

PEA APHID: Numbers have not changed significantly in the last two weeks. Sweep net counts in fields surveyed as far north as Chippewa County are still very low and average less than 0.2 per sweep. Pea aphid levels have shown a considerable decline since late May.

ALFALFA WEEVIL: A few late-stage larvae persist, but most of the population has pupated and new adults are appearing in sweep net collections. Larval counts in alfalfa have been reduced to less than 0.1 per sweep, and no further problems are anticipated this year.

PLANT BUG: Representative counts in the southern half of the state range from 0.1-1.2 per sweep. The average is only 0.4 per sweep, based on surveys in 43 fields. Nymphs of various maturities remain common in

most fields and reports suggest damaging populations are appearing in some nurseries, apple orchards, and in fruit crops.

SOFT-WINGED FLOWER BEETLE: This small, red and blue beetle has been unusually prevalent in scattered alfalfa fields surveyed by DATCP specialists this season. The adults are common on flowers and are thought to be pollinators, while the larvae are generalist predators of other insects. Soft-winged flower beetles are beneficial and are likely feeding on pea aphids and alfalfa weevil larvae at the sites where they have been observed.

Soft-winged flower beetle *Tom Murray bugguide.net*

CORN

STALK BORER: Damage to corn has become pronounced as larvae approach maturity. Surveys of V7- VT corn found infestation rates of 1-14%, with the highest population noted near Elk Mound in Eau Claire County. Treatment is no longer effective for many southern and western Wisconsin fields since the larvae have bored into the stalks and unemerged tassels. Treatments must be applied from 1,400-1,700 degree days (base 41°F), or prior to the V7 stage. Stalk borer feeding is unlikely to kill individual corn plants beyond V7.

EUROPEAN CORN BORER: Larval infestation rates remain about the same as reported in the previous two to three weeks, with the typical population affecting fewer than 10% of the plants and a few exceptional fields showing 15-30% whorl feeding. Approximately 11% of the cornfields sampled from June 23-July 6 had signs of ECB infestation. First-generation corn borers range in development from third-instar larvae to pupae in surveyed areas. Fourth- and fifth-instar larvae are the most prevalent stages.

European corn borer larva (3rd or early 4th instar) *Krista Hamilton DATCP*

WESTERN BEAN CUTWORM: Moth emergence continued at low levels for the second consecutive week. The Wisconsin network of 62 pheromone traps registered a cumulative total of 28 moths as of July 6, which is nearly equivalent to the 29 moths collected by the same time last year. The black light traps in Columbia, Monroe and Marathon counties also registered a total of 29 moths for the week. Approximately 10-25% of the population has emerged across the southern two-thirds of the state.

Western bean cutworm eggs *Mark Moore, Moore Communications*

The appearance of moths indicates that close inspection of corn for egg masses and small larvae should be underway. The eggs are deposited in groups of 20-200 on the upper leaf surface and the larvae can be found in developing tassels. An economic threshold of 8% of plants infested for field corn and 4% infestation for

processing sweet corn has been established by the University of Wisconsin. Insecticide treatments applied at 90-95% tassel emergence are most effective.

CORN ROOTWORM: Beetles are appearing in Richland, Sauk and La Crosse counties. These insects will become increasingly abundant this month, with peak emergence anticipated by mid- to late-August. Results of last summer's beetle survey suggest larval rootworm populations, and the threat of root damage to continuous corn, could be slightly elevated this season as compared to 2015. The highest risk areas include the southwest, south-central and east-central districts, where economic averages of 0.8 beetles per plant were recorded last August.

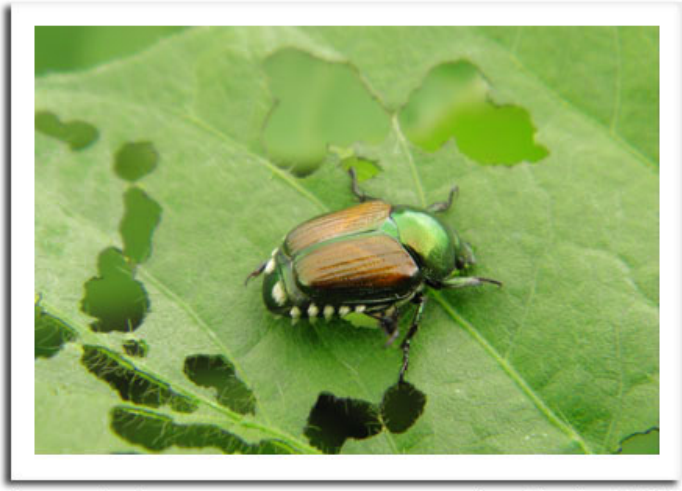
SOYBEANS

SOYBEAN APHID: Levels of this insect remain well below the economic threshold of 250 aphids per plant and 50% of the 44 soybean fields surveyed in the past two weeks still had no detectable populations. Average counts at the sites sampled from June 23-July 6 were less than five aphids per plant and 35 per infested plant, based upon examination of 100 plants per field. The highest total count was only 62 aphids on nine of 100 plants (seven aphids per infested plant) in a field near Portage in Columbia County.

Soybean aphids *Krista Hamilton DATCP*

Despite the low sample numbers, aphid populations could increase rapidly in flowering soybean fields and economic densities may develop later this month. This pest requires consistent monitoring from now until the R5.5 stage of soybean growth in August.

DEFOLIATORS: Defoliation is common but light, ranging from 5-10% on 1-15% of plants in most surveyed fields. The leaf feeding insects observed during recent surveys were the rose chafer, bean leaf beetle, Japanese beetle, sand chafer, slugs and various caterpillars. Slug feeding damage appears to have declined with the drier weather. Defoliation rates have not exceeded the 20% economic threshold for soybeans in the bloom stages as of July 6.



Japanese beetle *Krista Hamilton DATCP*

SOYBEAN ROOT ROT: Samples from 11 of 30 soybean fields (37%) have tested positive for Phytophthora root rot as of July 6, according to the DATCP Plant Industry Lab. Soybean seedlings have been collected thus far from 11 counties: Crawford, Dane, Dodge, Fond du Lac, Grant, Green, Iowa, Jefferson, Lafayette, Racine and Rock. *Phytophthora sojae* has been confirmed from fields in Dane, Dodge, Green, Jefferson, Racine, Rock, and Walworth counties. The Lab expects to process samples from another 20 northern Wisconsin fields before the survey is complete. Preliminary results indicate that the incidence of *P. sojae* may be similar to last season when 19 of the 50 soybean fields (38%) sampled for root rot tested positive.

FRUITS

JAPANESE BEETLE: Numbers are increasing in fruit and field crops over much of the state, particularly in the south-central and western counties. Neem-based products that contain azadirachtin (e.g., BioNeem) may still be effective at sites where beetle populations are low and the first adults are just starting to immigrate into vineyards and orchards. These products can be used to deter beetles for 3-4 days before reapplication is needed.

Products sold as "neem oil" that do not list the ingredient azadirachtin on the label are not effective against Japanese beetle.

GRAPE BERRY MOTH: The start of second-generation egg-laying may have started or will begin next week in the Viroqua area and other advanced southwestern and western Wisconsin vineyards. Insecticides targeting GBM just before egg hatch (i.e., insect growth regulators) will be most effective if applied at this time. By contrast, broad spectrum insecticides directed against GBM larvae should be delayed until 1,010 degree days, or approximately 10 calendar days later. The use of pheromone traps to monitor GBM flights and properly time controls is strongly recommended. Scouting for infested fruits and other signs of GBM, particularly in border rows adjacent to wooded areas in the vineyard, is also advised at this time. Treatment of perimeter rows can provide satisfactory control of this pest.

Grapes infested with grape berry moth larvae *Krista Hamilton DATCP*

APPLE MAGGOT: Emergence of flies began last week, with the capture of flies reported in Fond du Lac and Sheboygan counties. Counts from June 30-July 6 were low at 1-2 flies per trap in seven of 17 orchards. Apple maggot traps should be cleaned of non-target flies periodically and recoated with insect sticky trap material as needed.

SPOTTED TENTIFORM LEAFMINER: The second flight should peak soon at most monitoring sites. Egg laying is expected to be heavy as long as pheromone traps continue to register high numbers of moths. Apple orchards with populations greater than one mine per leaf or a history of infestation should consider treatment of second generation larvae to reduce build-up of leafminers before the third flight begins in August.

CODLING MOTH: Counts have decreased in most orchards as the first flight subsides. Orchardists who have not observed a distinct decline in moth activity and are having difficulty determining the most effective treatment window should use an accumulation of 1,000 degree days (base 50°F) from the spring biofix in late May to time the start of larvicide applications. As a general rule, approximately 1,000 degree days are required between the first and second larval generations.

VEGETABLES

TOMATO HORNWORM: Moths are active and laying eggs on the undersides of tomato leaves. Tomato growers who have experienced past problems with this pest should inspect the undersides of leaves for individually laid eggs that are smooth, spherical and pale green in color. Once the eggs hatch, the larvae grow very rapidly and quickly defoliate plants. Spot treatment may be justified for infestations of one or more larva per plant on a minimum of 10 plants. Prompt removal of the larvae is the best control measure.

Tomato hornworm larva *braddock outdoor.blogging.com*

SQUASH BUG: Reports suggest that these difficult-to-control insects have become abundant in pumpkin, squash and melon crops since late June. The treatment threshold for squash bugs is based on an average count of one egg mass per plant, although scouting for tiny eggs is often impractical in larger plantings. If the insects are numerous and wilting is observed, pyrethroid insecticides such as permethrin directed against the nymphs are an option for control. Growers should be aware that the efficacy of these materials is reduced at temperatures above 80°F and the smaller nymphs are

more readily killed than the adults. Refer to UWEX publication A3422 “Commercial Vegetable Production in Wisconsin” for a list of registered insecticides.

Squash bug adult female *Krista Hamilton DATCP*

COLORADO POTATO BEETLE: The summer generation of beetles is expected to begin appearing in potatoes in the next two weeks. Pupation occurs in 7-10 days at this time of year and larval development proceeds much more rapidly under normal July temperatures. Conversely, cool weather slows CPB feeding activity and development. Summer beetles and all second generation larval stages are considered damaging.

ONION MAGGOT: Second generation flies are emerging near La Crosse, Madison, Spring Green, and other locations where 1,950 GDD (simple base 40°F) have been surpassed. Emergence is anticipated near Fond du Lac, Eau Claire and Hancock in the week ahead. Management of the summer generation is less critical than spring and fall populations since egg desiccation and mortality rates are higher at warmer temperatures, but season-long sanitation is still important for preventing future infestations. Second brood eggs are deposited near previously-damaged onions.

CABBAGE CATERPILLARS: Populations of diamondback moths and imported cabbageworms are reportedly high in a few southern and western Wisconsin cabbage plantings. The larvae of these cabbage pests feed on leaves and cause large ragged holes, eventually infesting the developing heads of broccoli, cabbage and cauliflower. Treatment thresholds are reached when 10% of cabbage in the early heading to mature head stages are infested, or 10% of broccoli and cauliflower in the first flower or curd to maturity phase are damaged. Cole crop growers are reminded that imported cabbageworms, diamondback moths and cabbage loopers are considered to be a single caterpillar complex, and the same infestation threshold applies to all three species. *Bacillus thuringiensis* (Bt) and chemical insecticides are effective forms of control.

SQUASH VINE BORER: Continued inspection of pumpkins, squash, gourds, and other vine crops for eggs and evidence of larval feeding is advised for another two weeks. The early- and intermediate-stage larvae are currently boring into squash stems and runner vines, causing plants to wilt. Insecticidal controls are only useful if applied before the larvae tunnel into vines and reapplication may be required during the adult flight period. Squash varieties most susceptible to infestation are ‘Blue Hubbard’, 'Boston Marrow’ and ‘Golden Delicious’, while 'Butternut', ‘Dickenson pumpkin’ and ‘Green Striped Cushaw’ have shown some resistance or tolerance.

Squash vine borer larva *Julie sanguinaria-budding.blogspot.com*

NURSERY & FOREST

SEPTORIA LEAF SPOT: Dogwood shrubs in Ozaukee County were infected with this common fungal disease. Diagnostic characteristics are small, dark purple lesions that first appear on the lower leaves and stems and later enlarge and spread to the upper leaves. The simplest cultural control is to increase plant spacing to promote airflow.

FLEA BEETLE: An assortment of flea beetle species were noted this week on weigela shrubs at a garden center in Ozaukee County. These tiny beetles chew small pits on the underside of foliage that eventually turn brittle and

fall off, leaving small circular holes in the leaves. Heavy feeding pressure can result in plant wilting or stunting. Most flea beetles prefer vegetable crops, though ornamental flowers, shrubs and trees are also susceptible to attack. Chemical control is occasionally warranted to reduce damage to nursery stock.

DAYLILY LEAFMINER: Mines caused by the larvae of this destructive exotic Asian fly were found on daylilies during recent nursery inspections. Daylily leafminer (DLM) larvae feed between the upper and lower leaf surfaces, creating long, white mines that run parallel to leaf veins. Daylilies are generally not killed by DLM, but infested plants are unmarketable. Removal and destruction of mined leaves is advised to reduce the spread of this exotic pest.

PHYLLOSTICTA LEAF SPOT: The distinctive light brown leaf lesions with purple-red borders observed on 'Limelight' hydrangeas in Price County are symptoms of phyllosticta leaf spot, a primarily aesthetic plant disease also known as purple-bordered leaf spot or eye spot. Severe infection induces drying and premature shedding of leaves, but damage from this disorder is usually limited to the leaf tissue and generally poses no serious health risk to the plant. Because the effects of phyllosticta are mainly aesthetic, fungicide treatment is seldom required.

Phyllosticta leaf spot on hydrangea *Tim Allen DATCP*

BROAD MITE: Nursery inspectors report that sweet potato vine plants in a Sawyer County nursery were heavily infested with these mites. The stunted, curled, and clustered growth caused by broad mites can be similar to injury from herbicides or other diseases, thus mite infestation must be confirmed by examining the undersides of young leaves for eggs. The eggs are elliptical, colorless, and are each covered by small whitish bumps visible only with a 40x or higher magnification hand lens. Mite damage is often concentrated since the mites do not fly and dispersal is limited. Severely infested plants should be rogued, while plants with minor injury may benefit from a miticide treatment that has translaminar or systemic properties.

Broad mite damage on sweet potato vine *Tim Allen DATCP*

GYPSY MOTH: Gypsy moth mating disruption aerial treatments were completed last week in Crawford, Grant and Vernon counties and will resume on July 8 and 9 in Buffalo, Eau Claire, Pepin and Trempealeau counties. Planes are applying a non-toxic pheromone product which disrupts moth mating. Adult moths have been observed in southern Wisconsin, while larvae in the Wausau area of the north-central region are currently in the late-instar and pupal stages. Aerial spraying should be finished for the year before the end of July.

As of July 6th, gypsy moth trappers have set 11,087, or about 96%, of the 11,502 traps expected to be deployed this summer. Trappers are now conducting informal spot-checks of traps to determine the extent of moth emergence. Official trap checking will start by July 11 south of Hwy 21, during the week of July 18 in central Wisconsin, and by July 25 in the north.

APPLE INSECT & BLACK LIGHT TRAP COUNTS JUNE 30 - JULY 6

COUNTY	SITE	STLM[1]	RBLR[2]	CM[3]	OBLR[4]	APB[5]	LPTB[6]	DWB[7]	AM RED[8]	YELLOW[9]
Bayfield	Keystone	0	0	9	15	0	1	0	0	2
Bayfield	Orienta	0	0	0	0	0	21	40	—	—
Brown	Oneida	400	37	15	21	0	5	22	0	0
Columbia	Rio	—	30	2	0	0	4	3	0	0
Crawford	Gays Mills	—	—	—	—	—	—	—	—	—
Dane	DeForest	170	14	7	4	—	—	—	—	—
Dane	Edgerton	—	—	—	—	—	—	—	—	—
Dane	McFarland	70	10	4	—	—	—	—	—	—
Dane	Mt. Horeb	311	105	0	3	1	6	15	0	0
Dane	Stoughton	188	114	8	1	0	2	10	0	0
Fond du Lac	Campbellsport	200	25	0	33	3	12	15	—	—
Fond du Lac	Malone	148	68	9	1	0	5	19	0	0
Fond du Lac	Rosendale	—	—	—	—	—	—	—	—	—
Grant	Sinsinawa	—	—	3	—	—	—	—	—	—
Green	Brodhead	14	23	0	1	0	0	0	0	0
Iowa	Mineral Point	610	145	5	9	3	9	27	—	1
Jackson	Hixton	82	5	1	1	0	7	53	0	0
Kenosha	Burlington	243	83	3	3	4	13	97	—	—
Marathon	Edgar	1242	18	5	9	0	5	71	1	0
Marinette	Niagara	93	8	0	—	0	15	6	—	—
Marquette	Montello	1296	71	3	2	—	—	—	—	—
Ozaukee	Mequon	150	30	7	4	—	—	—	*2	—
Pierce	Beldenville	233	21	2	8	0	24	3	0	0
Pierce	Spring Valley	391	67	0	0	0	31	98	0	0
Racine	Raymond	90	33	1	7	4	2	28	0	0
Racine	Rochester	210	26	9	5	1	1	24	*1	0
Richland	Hill Point	154	84	0	10	0	26	14	**0	**0
Sheboygan	Plymouth	567	33	7	23	0	10	66	**2	2
Walworth	East Troy	—	—	—	—	—	—	—	—	—
Walworth	Elkhorn	—	—	—	—	—	—	—	—	—
Waukesha	New Berlin	147	—	5	7	10	9	72	0	1

[1]Spotted tentiform leafminer; [2]Redbanded leafroller; [3]Codling moth; [4]Obliquebanded leafroller; [5]American plum borer; [6]Lesser peachtree borer; [7]Dogwood borer; [8]Apple maggot red ball; *Unbaited; **Baited; [9]Apple maggot yellow board.

COUNTY	SITE	BCW[1]	CEL[2]	CE[3]	DCW[4]	ECB[5]	FORL[6]	SCW[7]	TA[8]	VCW[9]	WBC[10]
Columbia	Arlington	0	0	3	0	0	0	0	1	0	0
Columbia	Pardeeville	1	1	0	0	6	19	5	2	0	18
Dodge	Beaver Dam	0	0	0	0	4	0	0	4	0	0
Fond du Lac	Ripon	0	0	0	0	2	0	0	1	0	0
Grant	Prairie du Chien	0	0	0	0	0	3	0	0	0	0
Manitowoc	Manitowoc	0	0	0	0	0	0	1	6	0	0
Marathon	Wausau	3	3	1	0	5	1	33	14	0	2
Monroe	Sparta	0	0	0	0	0	2	0	0	0	9
Rock	Janesville	0	2	0	0	0	2	0	16	0	0
Walworth	East Troy	0	0	0	0	0	3	0	1	0	0
Wood	Marshfield	3	0	0	0	0	2	13	2	1	0

[1]Black cutworm; [2]Celery looper; [3]Corn earworm; [4]Dingy cutworm; [5]European corn borer; [6]Forage looper; [7]Spotted cutworm; [8]True armyworm; [9]Variegated cutworm; [10]Western bean cutworm.