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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
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WEATHER & PESTS

Mostly dry weather dominated the state during the last week of August, facilitating harvest of potato, small grain, and vegetables. Near or below-normal temperatures prevailed for a fifth consecutive week, with afternoon highs limited to the 60s and 70s and overnight lows falling to the upper 30s along Lake Michigan,. A storm system on August 26 brought rain to much of the state, including storm totals exceeding 2 inches in the far southeast near Racine and Kenosha, though lighter amounts (<.25 inch) were recorded in the west. Conditions supported fieldwork such as seeding fall crops and baling hay, but crop development continued to lag the normal pace by 2-3 weeks, raising concern for potential damage if the first autumn freeze comes early. A rare combination of sustained September heat, adequate moisture, and a very late frost will be needed for Wisconsin's late-developing corn and soybeans to reach maturity this fall.

LOOKING AHEAD

LATE BLIGHT: Additional reports of late blight were confirmed in Crawford, Pierce, Polk, Sauk and St. Croix counties this week, bringing the total number of counties with verified late blight cases to 12 (also Adams, La Crosse, Monroe, Portage, Vernon, Waushara and Wood). Continued treatment of susceptible potato and tomato crops with a combination of antisporulant and protectant fungicides is advised by UW, particularly for locations in close proximity to the recent late blight detections. Reapplication every 5-7 days is required for most late blight-specific products.

CORN ROOTWORM: Beetle counts decreased or remained the same as in 2018 in the northern and central crop districts, while averages increased in the southwest and south-central counties, according to this month's corn rootworm survey. The state average count of 0.3 beetle per plant in 2019 increased slightly from last year's record-low average of 0.2 per plant. Approximately 12% of the corn sites sampled had high beetle pressure (>0.75 per plant), which should serve as a reminder to corn producers and crop advisors that beetle populations must be evaluated by early September to inform next year's rootworm management decisions and planting rotation.

BROWN MARMORATED STINK BUG: This invasive pest has been collected on survey traps in Dane, Racine, and Rock counties throughout August. The highest cumulative count to date is 43 adults and three nymphs at the Janesville monitoring site. Similar to the multicolored Asian lady beetle and boxelder bug, BMSB aggregates on the exteriors of buildings in autumn and overwinters in homes and other structures. Densities in southeastern,

south-central, and portions of east-central Wisconsin are now high enough that BMSB has become an urban nuisance, and swarming can be expected this fall.

Brown marmorated stink bug *Krista Hamilton DATCP*

FALL PESTS: Nuisance insects including the boxelder bug, brown marmorated stink bug, multicolored Asian lady beetle, and western conifer seedbug will begin aggregating on warm southern and western exposures of buildings next month, in advance of their indoor invasion. Exterior insecticide treatments may temporarily deter these insects from entering homes, but exclusion measures such as sealing cracks around windows, doors, siding and other openings are preferred. Insecticides should be only applied by a licensed pest control technician and considered for severe infestations. Fall nuisance insects do not reproduce inside the home or cause structural damage.

CORN EARWORM: A locally significant flight of 88 moths per trap was reported from the Mayville (Dodge County) monitoring location, while eight other sites collected no more than 35 moths per trap this week. A cumulative total of 792 moths have been captured in 15 pheromone traps as of August 28. Sweet corn growers should maintain corn earworm scouting and management programs as long as moth activity persists and green silks are available for egg laying.

FORAGES & GRAINS

POTATO LEAFHOPPER: Surveys conducted in western Wisconsin during the final week of August found variable, mostly non-economic populations. Counts were below 2.4 per sweep in all but two of the fields sampled (both in Vernon County) and the weekly average was 0.7 per sweep. The proportion of nymphs appearing in sweep nets has declined and significant population increases are not expected for the remainder of the growing season.

DEGREE DAYS JAN 1 - AUGUST 28

LOCATION	50°F	2018	NORM	40°F
Dubuque, IA	2514	2770	2367	3922
Lone Rock	2276	2486	—	3631
Beloit	2330	2457	2407	3692
Sullivan	2166	2331	2280	3479
Madison	2302	2445	2294	3667
Juneau	2080	2351	—	3373
Racine	2039	2242	—	3333
Waukesha	2148	2264	—	3459
Milwaukee	2117	2291	2211	3420
Hartford	2045	2290	—	3333
Appleton	2056	2384	—	3332
Green Bay	2004	2332	2063	3273
Big Flats	2022	2344	—	3318
Hancock	1941	2202	2224	3214
Port Edwards	1936	2215	2180	3198
La Crosse	2254	2587	2504	3610
Eau Claire	2143	2485	2260	3441
Cumberland	1792	2021	2119	2987
Bayfield	1555	1768	—	2681
Wausau	1696	1987	2075	2873
Medford	1651	1906	1901	2819
Crivitz	1850	2145	—	3055
Crandon	1662	1932	1611	2806

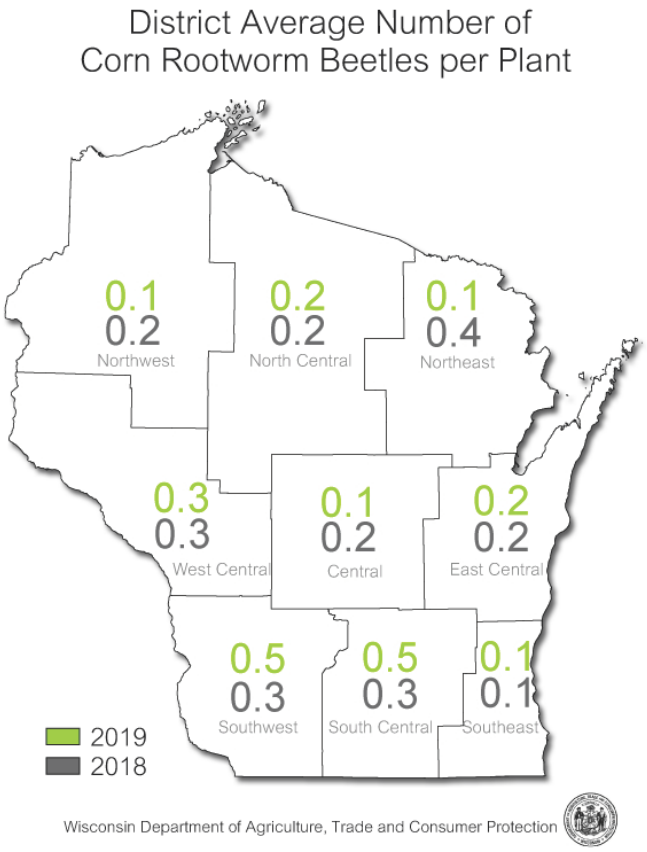
Method: Modified B50; Modified B40 as of January 1, 2019. NORMALS based on 30-year average daily temps, 1981-2010.

PEA APHID: Densities have escalated in localized fields. One alfalfa field surveyed in Crawford County and three in Vernon County had averages of 10-20 aphids per sweep, the highest counts documented in several weeks. Other sites had lower populations of 2-5 aphids per sweep. The mostly dry, cool weather of August has probably contributed to the late-season aphid resurgence.

GRASSHOPPER: This pest remains common in the grassy areas bordering alfalfa, but minimal feeding injury is evident beyond the field margins. Alfalfa stands with counts in excess of 3-4 per sweep are unusual in the southern half of the state.

CORN

CORN ROOTWORM: The annual survey conducted from August 1-26 documented an increase in adult rootworm populations in the southwest and south-central areas and very low pressure in the other seven crop reporting districts. District averages in the northern, central and southeastern regions remained at or below 0.3 beetles per plant for the third year in a row, while averages in both the southwest and south-central areas rose from 0.3 beetle per plant last year to 0.5 per plant this season. About 20% of the southern fields sampled had economic populations of 0.75 or more beetle per plant, with the highest counts (4.3-7.2 beetles per plant) noted in Grant and Columbia counties.



Despite increases in the two of the nine crop districts, overall beetle populations were low again this year. The 2019 state average count is 0.3 beetle per plant, which is only marginally higher than the historically low 2017 and 2018 averages of 0.2 per plant, the lowest since surveys for this pest began in 1971. Above-threshold counts of 0.75 or more beetles per plant were found in 27 of 229 (12%) fields surveyed, compared to last year's 20 fields (9%), while no beetles were observed in 120 (52%) of the sites. The 2019 total count of 711 beetles was 26% higher than the 566 beetles counted in 2018.

In addition, again this season the northern species outnumbered the western species by a more than 2:1 ratio. Of the 711 beetles counted in this month, 499 were the northern variety, 207 were westerns, and 5 were the southern species. Last season, 379 northerns and 187 westerns were counted for a survey total of 566 adult rootworms in 2018. The northern corn rootworm has been the predominant species in the state for six consecutive years.

WESTERN BEAN CUTWORM: Larval infestations have been noted in Columbia, Green Lake, Marquette, and Winnebago counties in the last two weeks. In all instances, the o.75 to 1.5-inch caterpillars were located in the ear tips where control is ineffective. Most larvae were in the late instars and should enter the pre-pupal overwintering stage by early September.

Western bean cutworm larvae *Krista Hamilton DATCP*

EUROPEAN CORN BORER: The second flight of moths has continued at very low levels (< 12 moths) at a few black light trap locations. Surveys in corn show that larvae range from second- to fifth-instar in the western and central districts, as far north as Chippewa County. Larval infestations affecting 2-24% of corn plants were noted in 8% of fields checked from August 22-28. The ECB larval treatment window has closed for the season across the southern and central counties.

CORN EARWORM: Late-season migration flights continued this week. The DATCP pheromone trapping network captured 158 moths in 9 traps between August 22 and 28, for a cumulative total of 792 moths since mid-

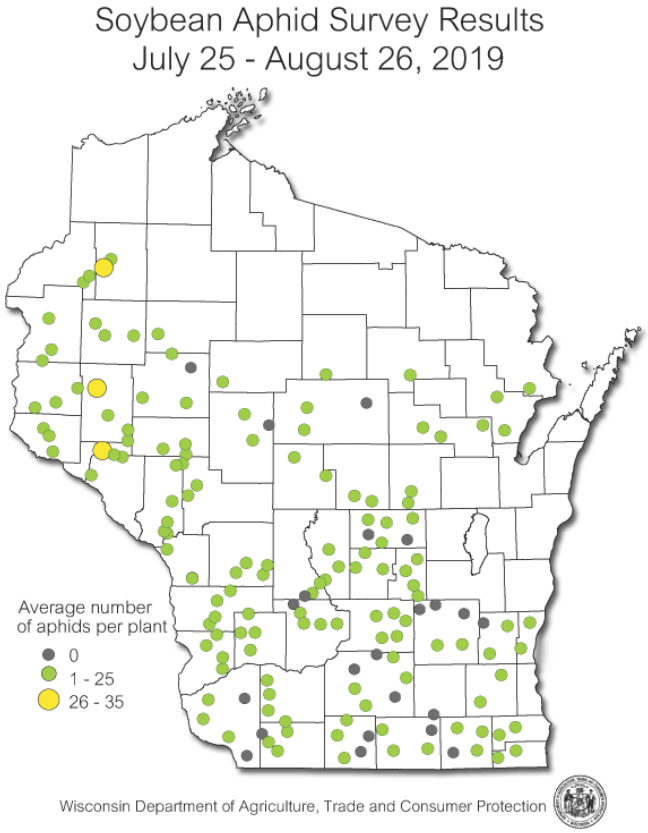
July. The high count for the reporting period was 88 moths at Mayville in Dodge County. The latest activity signals that fresh market and processing sweet corn remains at risk of infestation and should be monitored until harvest. Counts for the week ending August 28 were: Arlington 2, Beaver Dam 13, Bristol 35, Coon Valley 0, Cottage Grove 8, Janesville 2, Madison North 0, Marshfield 2, Mayville 88, Pardeeville 0, Ripon 4, Sun Prairie 0, Watertown 4, and Wausau 0.

SOYBEANS

JAPANESE BEETLE: Defoliation has been observed in 75% of the soybean fields examined in August. Counts taken during the soybean aphid survey ranged from 1-184 beetles per 100 sweeps, with a state average of 14 per 100 sweeps (8 per sweep in 2018). The highest counts of 50 or more beetles per 100 sweeps were noted in Crawford, Dunn, Green Lake, Pierce, Rock, Sauk and Walworth counties. Although beetles are still apparent in crops, orchards and residential areas, much of their activity should decline within two weeks. The prevalence of Japanese beetles documented by the survey signals that this invasive pest continues to pose a significant threat to the state's soybean crop.

Japanese beetles *Krista Hamilton DATCP*

SOYBEAN APHID: Populations recorded during the annual survey this month have been very low, aside from a few western Wisconsin fields with moderate populations. The state average count in 160 fields sampled from July 26-August 26 is only five aphids per plant, with no surveyed fields showing above-threshold populations of 250 aphids per plant. For comparison, the 2018 survey found an average of 14 aphids per plant, the 2017 average was six aphids per plant, averages from 2013-2016 ranged from 8-55 aphids per plant, and surveys from 2010-2012 documented counts of 7-16 aphids per plant. This season's state average is the lowest in the 18-year history of Wisconsin soybean aphid surveys. Although some localized fields have likely developed economic populations (>250 aphids per plant), survey results suggest that aphid control has generally not been required for most soybean acres this year. In addition, no cases of pyrethroid insecticide failure were reported in the state in 2019.



FRUITS

SPOTTED WING DROSOPHILA: This invasive fruit pest will remain a threat to ripening fruit as the fall raspberry season continues. Berry growers are advised to maintain treatment programs. Sprays applied in the early evening, 1.5 hours before or after sunset, will maximize contact exposure with SWD in the canopy since peak fly activity occurs between 6:00 and 10:00 pm. Insecticide rotation is critical for preventing SWD resistance development if short-interval sprays are being used, and pre-harvest interval (PHI) must be followed. Also necessary for SWD control are clean, daily harvests of all mature raspberries and cooling fruits to 34-38°F immediately after harvest,

if the berries are not being delivered to markets the same day.

APPLE MAGGOT: Flies are expected to persist in orchards for several more weeks, or until about 2,800 degree days (modified base 50°F) have been reached. The base 50°F accumulation as of August 28 was 2,330 at Beloit, 2,302 at Madison and 2,039 at Racine. Apple maggot pressure has been variable but generally low this season. Continued maintenance of red sphere traps is recommended through early September.

BROWN MARMORATED STINK BUG: Fruit growers and homeowners are advised to watch for swarms of this pest on warm fall days as the bugs aggregate in search of overwintering sites. BMSB is now well established throughout much of southern and eastern Wisconsin, with the highest densities concentrated in the areas from Fond du Lac north to Green Bay and in southern Wisconsin from Dane and Rock counties east to Milwaukee. Nymphs and adults usually remain active through October or early November.

Brown marmorated stink bug nymphs *bmcgenomics.biomedcentral.com*

SPOTTED TENTIFORM LEAFMINER: The third and last flight of the season has likely peaked in most apple orchards. Another larval generation should be anticipated in September. The third-generation pupae that develop by fall will remain dormant in the mines and overwinter inside of leaves on the ground. Apple growers who recorded large numbers of moths this month (>500 per trap) can assess infestations in September by monitoring orchard perimeters for leaf mines.

CODLING MOTH: Large moth flights continued in a few southern orchard locations in the past week, though numbers have declined at most sites. Apple growers are reminded that evaluating second-generation larval damage by early September will help to anticipate first-generation codling moth pressure next season. Orchards that have recorded captures higher than 10 moths per trap per week since the second flight began in July should find visible fruit damage at harvest. If trap counts were high (>10 per week) yet no damage is observed this fall or less than 1% of fruits are infested, then the source of the moths is likely from outside of the orchard.

Codling moth damage *simplycitysoil.wordpress.com*

VEGETABLES

CUCURBIT DOWNY MILDEW: The state's first cucurbit downy mildew (CDM) cases of the 2019 season were confirmed in Dane and Vernon counties on August 20. Leaf samples with CDM symptoms, including angular chlorotic lesions between the leaf veins, can be submitted for testing to the UW Plant Disease Diagnostics Clinic, 1630 Linden Drive, Madison, WI 53706-1598. Information on how to properly send samples is available at https://pddc.wisc.edu/sample-collection-and-submission/. A map showing the current status of CDM in Wisconsin and the U.S. is available at the CDM ipmPIPE forecasting site: http://cdm.ipmpipe.org/.

LATE BLIGHT: Potato and tomato growers are advised to continue protective fungicide treatments and monitoring plants for signs of infection. Late blight has been confirmed in Adams, Crawford, La Crosse, Monroe, Pierce, Polk, Portage, Sauk, St. Croix, Vernon, Waushara and Wood counties as of August 28, and the disease is likely to become more prevalent before harvest is complete. Rigorous sanitation including complete removal and destruct-

tion of all infected plants and debris is required if lesions are noticed. Composting will not generate sufficient heat to kill the pathogen and is not recommended.

Late blight lesions on tomato *Krista Hamilton DATCP*

WHITEFLIES: A severe infestation of whiteflies was observed this week on tomato plants in a La Crosse County high tunnel. The flies were abundant enough that the tomato foliage and fruits had become covered in sooty mold from their honeydew secretions. Whitefly populations on this order can produce a noticeable yield reduction by impairing photosynthesis and contaminating the fruits. Eliminating all plants and weeds for at least one week prior to starting a new crop is critical step in reducing fly pressure. Whiteflies can also be managed through biological control, including the commercially available parasitic wasp *Encarsia formosa*.

Sooty mold on tomato foliage and fruit *Krista Hamilton DATCP*

SQUASH BUG: Egg laying is still occurring in home gardens and larger plantings. Several fresh egg masses and many small nymphs were found this week on squash, pumpkins and zucchini on several western Wisconsin CSA farms, emphasizing the need for thorough fall clean-up of garden debris to reduce populations and eliminate winter hibernation sites. Crop rotation is also suggested if squash bugs have been a problem this summer.

Squash bug eggs and nymphs *Krista Hamilton DATCP*

NURSERY & FOREST

PINE-OAK OR FUSIFORM RUST: Pine-oak or fusiform rust (*Cronartium* sp.) was found on swamp white oak at a nursery grower in Rock County. The orange rust pustules observed on the leaf undersides are referred to as urediniospores, which are capable of reinfecting oak leaves and rapidly building up on the foliage. From this stage, telia develop that eventually release spores which infect the alternate pine host and cause visible galls in the stems. Control measures include pruning and burning of infected branches.

Pine-oak rust *Shanon Hankin DATCP*

DOWNY MILDEW: The early stages of downy mildew infection were identified last week on giant purple hyssop plants in Vilas County. Initial symptoms appear as small greenish yellow, translucent spots that eventually spread to cover the leaf, fruit and/or flower. Affected areas may turn brown and later develop a downy gray fuzz. Fungicides are available downy mildew control.

Downy mildew on giant purple hyssop *Timothy Allen DATCP*

ORANGE-STRIPED OAKWORM: Late-instar caterpillars were found on red oak trees at a nursery grower in Grant County this week. According to the inspector, a few of the young red oaks had been severely defoliated. As the caterpillars mature in September, they will descend from the tree to pupate in the soil.

Orange-striped oakworm *Shannon Hankin DATCP*

Red oak is reported to be favored host of this species, with chestnut and several other deciduous tree species listed as food plants. The heaviest feeding occurs late in the season (late July-August) and rarely threatens the health of the tree, but successive years of defoliation may be a concern for younger trees. Management includes pruning infested branches at the egg and/or young caterpillar stages.

REDHEADED FLEA BEETLE: Leaf feeding damage by this generalist pest has been observed at numerous growing locations around the state this season. The beetles feed on a wide assortment of nursery stock, with hydrangea, weigela, dogwood, and fruit and berry plants being most commonly reported. Adults may be present from June through November, with 2-3 generations per year contingent on temperature and suitable host plants. Because the adult flea beetles also feed on many weeds commonly associated with nursery production, weed control in both field and container stock is important for flea beetle management. Research has shown that redheaded flea beetles can emerge as adults from containers that have been moved from field to greenhouse.

Red headed flea beetle *NC State Extension*

APPLE INSECT & BLACK LIGHT TRAP COUNTS AUGUST 22 - 28

COUNTY	SITE	STLM[1]	RBLR[2]	CM[3]	OBLR[4]	DWB[5]	LPTB[6]	BMSB[7]	AM RED[8]	YELLOW[9]
Bayfield	Keystone	53	0	1	0	0	0	0	0	*8
Bayfield	Orienta	81	0	0	1	13	1	—	0	*0
Brown	Oneida							0		0
Columbia	Rio	3	61	0	0	0	0	0	0	0
Crawford	Gays Mills	—	—	—	—	—	—	—	—	—
Dane	DeForest	—	—	—	—	—	—	—	—	—
Dane	Mt. Horeb	—	—	—	—	—	—	—	—	—
Dane	Stoughton	45	116	1	2	0	0	0	0	3
Fond du Lac	Campbellsport	250	23	0	0	0	0	0	0	0
Fond du Lac	Malone	10	30	3	10	0	0	0	**4	0
Fond du Lac	Rosendale	—	—	—	—	—	—	—	—	—
Grant	Sinsinawa	—	—	—	—	—	—	—	—	—
Green	Brodhead	—	—	—	—	—	—	—	—	—
Iowa	Mineral Point	130	123	34					**5	*2
Jackson	Hixton	39	21	0	0	3	0	0	0	0
Kenosha	Burlington	105	77	4	5	3	1	0	*0	—
Marathon	Edgar	—	—	—	—	—	—	—	—	—
Marinette	Niagara	26	2	0[MD]	0	2	0	0	0	0
Marquette	Montello	1053	46	0	8	0	1	0	0	0
Ozaukee	Mequon	70	22	7	11	0	0	0	1	0
Pierce	Beldenville	—	—	—	—	—	—	—	—	—
Pierce	Spring Valley	67	30	0[MD]	34	20	1	0	*0	0
Racine	Raymond	681	86	16	4	12	1	—	0	0
Racine	Rochester	76	144	6	16	0	0	0	*11	0
Richland	Hill Point	81	144	6	2	0	2	0	**0	**1
Sheboygan	Plymouth	—	—	—	—	—	—	—	—	—
Walworth	East Troy	—	—	—	—	—	—	—	—	—
Walworth	Elkhorn	—	—	—	—	—	—	—	—	—
Waukesha	New Berlin	50	20	1	0	0	0	—	0	0

[1]Spotted tentiform leafminer; [2]Redbanded leafroller; [3]Codling moth; [4]Obliquebanded leafroller; [5]Lesser peachtree borer; [6]Dogwood borer; [7]Brown marmorated stink bug; [8]Apple maggot red ball; *Unbaited; **Baited; [9]Apple maggot yellow board; [MD]Mating disruption.

COUNTY	SITE	BCW[1]	CEL[2]	CE[3]	DCW[4]	ECB[5]	FORL[6]	SCW[7]	TA[8]	VCW[9]	WBC[10]
Columbia	Arlington	—	—	—	—	—	—	—	—	—	—
Columbia	Pardeeville	0	0	0	50	12	7	4	27	0	0
Dodge	Beaver Dam	0	2	0	13	0	0	4	0	2	0
Fond du Lac	Ripon	2	0	0	13	3	0	2	0	0	0
Grant	Prairie du Chien	—	—	—	—	—	—	—	—	—	—
Manitowoc	Manitowoc	—	—	—	—	—	—	—	—	—	—
Marathon	Wausau	0	0	0	13	0	0	29	0	0	0
Monroe	Sparta	0	0	0	15	0	1	9	0	0	0
Rock	Janesville	3	3	2	17	1	19	0	6	0	0
Walworth	East Troy	—	—	—	—	—	—	—	—	—	—
Wood	Marshfield	2	0	0	1	1	0	8	0	5	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.