

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

Adverse weather conditions threatened crop production and resulted in a record year for unplanted acres in Wisconsin in 2019. Unprecedented spring rainfall accompanied by below-normal temperatures soaked the state in April and May, leading to a historically slow planting pace for corn and soybeans. By June 2, only 58% of the state's corn and 34% of the soybeans had been planted, breaking 2013 records of 74% and 43%, respectively. Mid-July heat spurred a more rapid rate of crop growth and an August drying trend pushed development along, but September brought more heavy rains that kept soils soggy and fieldwork well behind schedule. Soils were still unfavorably wet when the first freeze of fall ended the growing season for much of the state on October 11. The numerous weather-related challenges in 2019 led to a staggering 585,000-acre reduction in planted corn and soybean acres, along with widely variable crop conditions and erratic yields.

PEST HIGHLIGHTS

SWEDE MIDGE: A new state record was established in June with the first Wisconsin detection of swede midge, *Contarinia nasturtii* (Diptera: Cecidomyiidae), a small fly that infests brassica plants and causes distorted growth and damage to developing flower heads. The flies were captured on sticky traps in Dane County on June 17 and

in Milwaukee County on July 1, as part of a DATCP vegetable pest survey in urban community gardens. Swede midge is extremely difficult to control once established and has the potential to significantly impact brassica production in Wisconsin. DATCP is planning an expanded survey effort for this new pest in 2020.

CORN ROOTWORM: After two consecutive years of record-low averages, beetle counts increased in southern Wisconsin in 2019. The annual survey in August found higher rootworm pressure in the southwest and south-central areas compared to 2018, while populations remained the same or decreased in the seven other crop districts. The state average number of beetles per plant also increased this year – from 0.2 in 2018 to 0.3 in 2019 – reflecting the higher beetle counts observed in the southern districts in late summer.

RAMORUM BLIGHT: On August 23, DATCP announced the interception of a rhododendron plant infected with *Phytophthora ramorum*, or Ramorum blight, in Marathon County. The plant was supplied by a Washington state nursery that had shipped over 4,000 potentially infected azalea, kalmia and rhododendron plants to Wisconsin and at least 27 other states. A trace-back survey of 59 garden centers and nurseries found only the one infected rhododendron plant, although the USDA reported in October that “Double Red Knockout” roses sold at Walmart stores were also potentially infected with Ramorum blight.

The roses came from an Oklahoma nursery. Ramorum blight can be transmitted to as many as 100 different plant species, including hardwoods, softwoods and shrubs. Oak trees are at greatest risk of the disease, which is also referred to as sudden oak death.



Sudden oak death in rhododendron

Tim Allen DATCP

BROWN MARMORATED STINK BUG: Dodge and Lafayette counties were the only additions to the Wisconsin brown marmorated stink bug (BMSB) distribution map this year. Populations are currently highest in the Madison, Milwaukee and Fond du Lac to Green Bay areas, although this pest's range is also expanding into western Wisconsin. As of November 1, BMSB reports have been verified from 30 of the state's 72 counties.



Brown marmorated stink bug Washington State University Extension

LILY LEAF BEETLE: The invasive red lily leaf beetle (LLB) was reported in six new counties this season: Dane, Door, Oneida, Pierce, Price and Taylor. First detected in Marathon County in 2014, LLB has now been confirmed

in 12 Wisconsin counties. The adult beetles are bright red and conspicuous, while the larvae can be found by inspecting Asiatic lily leaves for defoliation. The leaf damage caused by LLB larvae can be significant and, without intervention, will eventually kill the plant.

BOXWOOD BLIGHT: This devastating fungal disease of boxwood was diagnosed on boxwood from a Dane County residence on October 25, according to Dr. Brian Hudelson of the UW Plant Disease Diagnostics Clinic (PPDC). Boxwood blight had previously been found by DATCP inspectors on plants at two big box retailers in Dane and Portage counties and in two Kenosha County nurseries, but the recent case marks the first report of the disease in the landscape. The PPDC currently offers boxwood blight testing for free: <https://pddc.wisc.edu/sample-collection-and-submission/>.



Boxwood blight

Marcia Wensing DATCP

EUROPEAN CORN BORER: Larval populations once again reached the lowest level in recorded history. DATCP's fall European corn borer (ECB) survey documented a state average of 0.01 borer per plant, the same average as in 2018 and tying the lowest count since 1942. The main contributing factor to the all-time low ECB pressure is Wisconsin's high use rate of Bt corn, which accounted for 75% of planted corn acres in the state last year.

FORAGES & GRAINS

POTATO LEAFHOPPER: Populations of this insect were the highest in many years, influenced by spring weather systems that brought large leafhopper migrations into the state. The monthly average count in 120 alfalfa fields sampled from July 1-31 was 2.04 per sweep, with above-

threshold averages (>2.0 per sweep) recorded at 47% of sites. The abundance of leafhoppers carried over into other crops as second-crop hay was harvested, and damage to fruit trees, nursery plants, and vegetables was common in July and August.

ALFALFA WEEVIL: Counts in first-crop alfalfa were low in 2019. The first appearance of larvae was delayed by below-normal spring temperatures and began in southern Wisconsin by May 22. Peak weevil feeding was predicted for June 16-29 across much of the state. Sweep net counts remained low (<1.0 per sweep) through late June, while leaf tip damage estimates did not exceed 20% in any surveyed field. The larval feeding window closed by early July without significant defoliation observed this year.

INDUSTRIAL HEMP

EURASIAN HEMP BORER: Moth emergence was first reported on May 26 in Walworth County and a peak in the spring flight was noted around June 9. Larval damage became evident by late June, when many hemp growers began noticing infestations in their fields. Reports of first-generation Eurasian hemp borer (EHB) damage were received by DATCP from July 1-14.



Eurasian hemp borer moth

Krista Hamilton DATCP

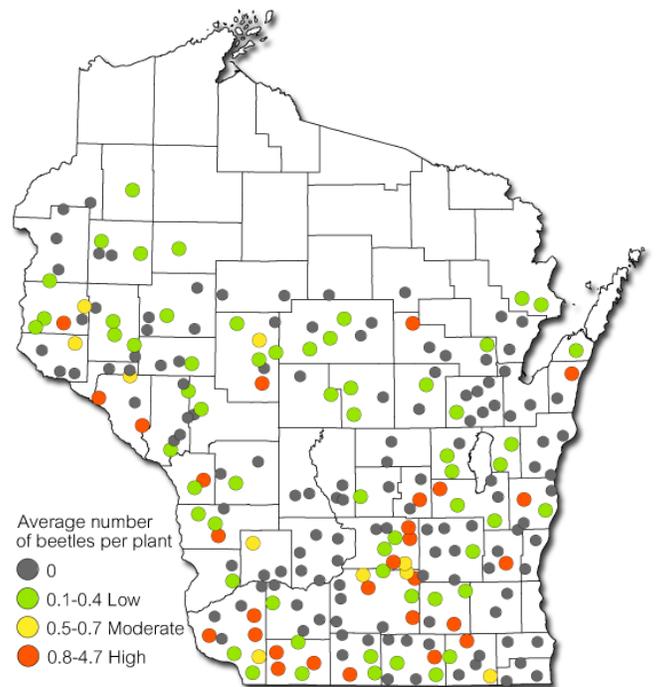
A second flight started around July 18 and continued for several weeks. The lengthy second flight produced widespread infestations of second-generation larvae ranging from very mild to severe. Observations from fall hemp inspections indicate EHB pressure was highest in southern Wisconsin. Eurasian hemp borer was the most common and destructive hemp pest insect in the state in 2019.

HEMP LEAF SPOT: Hemp foliage with distinct, round spots was diagnosed by the DATCP Plant Industry Laboratory with hemp leaf spot disease. The samples were collected from fields in Dane, Vernon and Waupaca counties. The *Bipolaris*-like fungal pathogen that causes hemp leaf spot has yet to receive an official name in the scientific literature.

CORN

CORN ROOTWORM: Beetle populations increased from historically low levels in 2017-2018, but remained low overall. The state average count in 229 cornfields sampled in August was 0.3 beetle per plant, which is only marginally higher than the all-time low average of 0.2 per plant recorded during the two preceding seasons. For the third year in a row, average counts remained at or below 0.3 beetles per plant across all six central and northern crop districts and the southeast region, while increases were limited to the south-central and southwest districts. Averages in these two districts rose from 0.3 beetle per plant last year to 0.5 per plant in 2019.

Corn Rootworm Beetle Survey Results 2019
State Ave. = 0.03 beetle per plant



Wisconsin Department of Agriculture, Trade and Consumer Protection

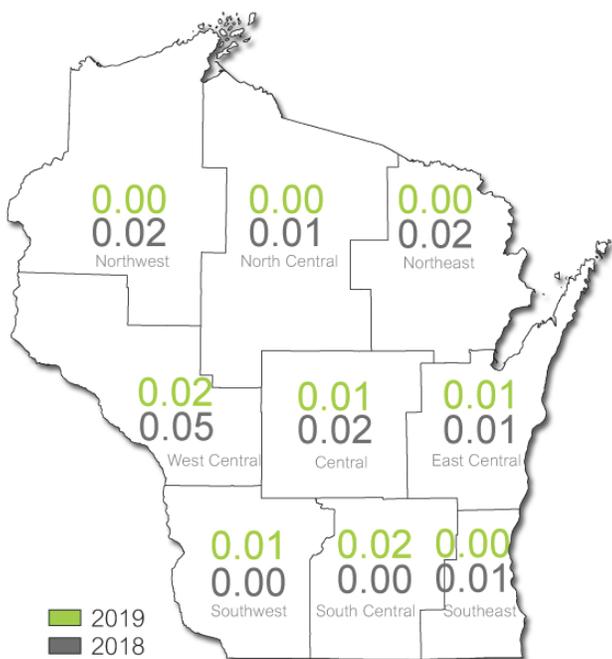


Above-threshold populations of 0.75 or more beetles per plant were found in 27 of 229 (12%) fields surveyed this season, compared to last year's 20 fields (9%). No

beetles were observed in 120 (52%) of the sites. The 2019 total count of 711 beetles was 26% higher than the 566 beetles recorded in 2018.

EUROPEAN CORN BORER: Larval populations remained historically low for the second consecutive season. The 2019 fall European corn borer survey found a state average count of 0.01 borer per plant, tying 2018 for the lowest population in 78 years. Seven of the state's nine agricultural districts showed averages less than or equal to 2018 levels, while negligible increases were noted in the southwest and south-central areas. Larvae were absent from 89% of the 229 sampled fields in September and October. The exceptionally low ECB pressure documented by the fall survey should provide reassurance to growers who planted non-trait corn seed in 2019, though conventional acreage will continue to require a higher level of scouting and management to address local variability in seasonal ECB abundance.

District Average Number of European Corn Borer Larvae per Plant



Wisconsin Department of Agriculture, Trade and Consumer Protection

CORN EARWORM: Pheromone traps captured a cumulative total of 3,495 moths (15 traps) during the late-season monitoring program, with the largest flights recorded during the last two weeks of September. The highest individual pheromone count was 589 moths at Mayville in Dodge County from September 19-25, while the Janesville black light trap registered its highest

weekly total of 932 moths from September 26-October 2. Compared to 2018 when 7,905 moths were collected in 15 pheromone traps, this year's total count was markedly lower. Although this would suggest the risk to late sweet corn from migrating corn earworm moths was also much lower in 2019, the September CEW flights produced localized larval damage to apples, corn and tomatoes this fall.



Corn earworm larva

Krista Hamilton DATCP

WESTERN BEAN CUTWORM: Moth counts and larval injury to corn increased in 2019 compared to the year before. The annual trapping program from June-August registered an average of 65 moths per trap (3,600 moths in 55 traps), the second highest average in 15 years. The survey record of 79 moths per trap (10,807 moths total) was set in 2010. The highest individual count for the 10-week monitoring period was 405 moths at Princeton in Green Lake County. This season's relatively large flight generated larval infestations in central and southern areas of the state that traditionally experience western bean cutworm problems, though widespread damage not observed during fall corn pest surveys.

BLACK CUTWORM: Unprecedented planting delays and wet, weedy field conditions contributed to an elevated threat of cutworm damage this spring. Moths appeared by April 4 and substantial migration flights occurred throughout May. The April-June trapping survey captured 1,271 moths in 44 traps, with an individual high count of 111 moths near Waupun in Dodge County. In 2018, the survey collected 2,217 moths in 47 traps. Late corn planting resulted in a protracted primary larval damage period that extended throughout June, but contrary to expectations, black cutworm damage to emerging corn was not prevalent this spring.

SEED CORN INSPECTION: Inspection of Wisconsin seed corn fields found no bacterial diseases of export significance this season. All 49 corn leaf samples tested at the Plant Industry Lab were negative for Goss's wilt, Stewart's wilt and bacterial leaf streak (*Xanthomonas vasicola* pv. *vasculorum*). Three fungal pathogens, common rust (48%), grey leaf spot (33%) and anthracnose (22%), were commonly observed. Certification for virus-caused diseases showed no high plains disease, wheat streak virus, or maize chlorotic mottle virus. One sample in Dane County tested positive for sugarcane mosaic virus (formerly maize dwarf mosaic virus).

SOYBEANS

JAPANESE BEETLE: Defoliation was 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 (the 2018 average was 8 per sweep). The highest counts of 50 or more beetles per 100 sweeps were noted in the southern and west-central districts for the second year in a row (see table 3 page 159). The prevalence of Japanese beetles documented by the survey signals that this invasive pest is becoming an increasingly significant defoliator threat to the state's soybean crop.



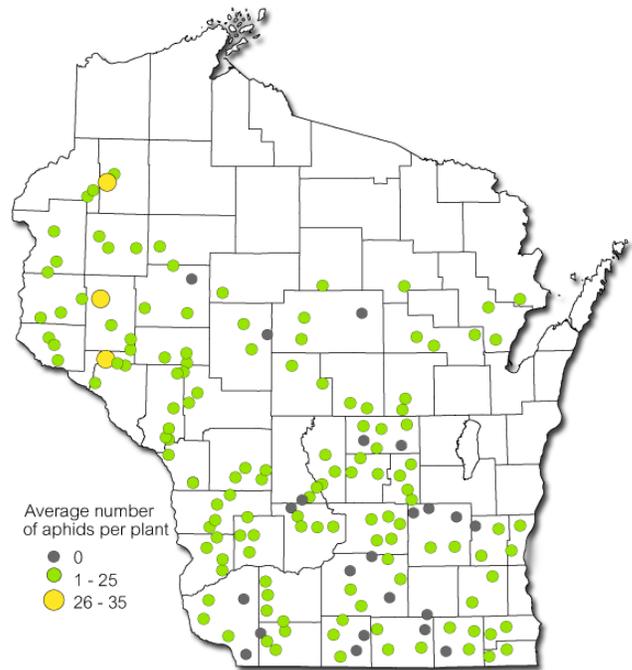
Japanese beetles

Krista Hamilton DATCP

SOYBEAN APHID: Populations recorded during the annual survey were very low, aside from a few western Wisconsin fields with moderate pressure. The state average count in 160 fields sampled from July 26-August 26 was only five aphids per plant. For comparison, the 2018 survey found an average of 14 aphids per plant, the 2017

average was six aphids per plant, and surveys from 2010 to 2016 documented counts of 7-55 aphids per plant. This season's state average was the lowest in the 18-year history of Wisconsin soybean aphid surveys. In addition, no cases of pyrethroid insecticide failure were reported in the state in 2019.

Soybean Aphid Survey Results July 25 - August 26, 2019



Wisconsin Department of Agriculture, Trade and Consumer Protection



WHITE MOLD GALL MIDGE: This new gall midge was found for the first time in Wisconsin this year. The white mold gall midge (WGM) *Karshomyia caulicola* (Diptera: Cecidomyiidae) was collected from a Pierce County soybean field in August and identified by a USDA ARS entomologist on October 2. The species is similar morphologically to the soybean gall midge (SGM) *Resseliella maxima*, but there are important differences between the two. First, the WGM is a fungus feeder and, unlike the SGM, is not considered a significant crop pest. Second, the larvae appear later in the season (after flowering) and can be found throughout white mold-infected fields. By contrast, SCM infestations can develop by the V3 stage and show an edge effect. Although the WGM is associated with soybean white mold, it does not spread or promote infection.

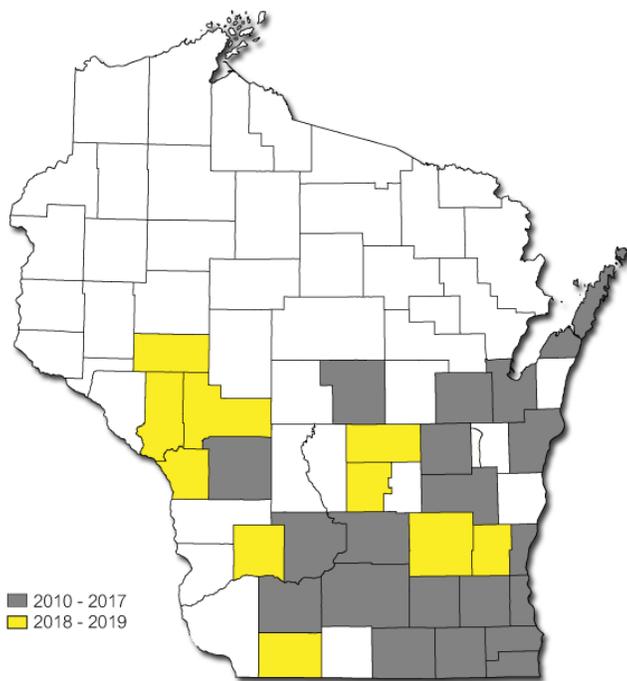
Soybean producers are advised to be alert for both this species and the soybean gall midge next season. The SGM has not yet been found in Wisconsin.

SEEDLING ROOT ROT: DATCP surveyed 52 soybean fields from June 21-July 19 for seedling root rot disease caused by *Phytophthora sojae*, general *Phytophthora* species, and general *Pythium* species. Testing at the Plant Industry Bureau Laboratory confirmed 38% (20 of 52) of fields were positive for *P. sojae* and 100% (52 of 52) were infected with *Pythium*. The *Phytophthora* rate decreased from the previous year when the pathogen was found in 46% of fields. Surveys in the past decade have found *P. sojae* prevalence ranging from 13% in 2011 to 49% in 2014.

FRUITS

BROWN MARMORATED STINK BUG: Monitoring for this emerging pest was carried out at 59 sites this season. DATCP cooperators, the UWEX Door County Agriculture agent, and two IPM Institute consultants set clear sticky panel traps in 39 apple orchards, 12 vineyards and 8 cherry orchards. Ten trap locations in Dane, Lafayette, Racine, Richland, Rock and Walworth counties were positive for BMSB.

Brown Marmorated Stink Bug Reports



Wisconsin Department of Agriculture, Trade and Consumer Protection

The season's highest count was 62 BMSB adults and nymphs on a trap near Janesville. Rock County is one of several counties, along with Brown, Dane, Fond du Lac,

Milwaukee, Outagamie, Waukesha, and Winnebago, where densities are high enough that BMSB has become an urban nuisance. The two new additions to the Wisconsin BMSB distribution map this year were Dodge and Lafayette counties. Thirty of the state's 72 counties are now known to be infested with BMSB.



Brown marmorated stink bug

Krista Hamilton DATCP

CODLING MOTH: Abnormally cold weather and heavy rains delayed codling moth emergence in 2019. The first moths were trapped on May 23, though initial flights were light and inconsistent, and the spring biofix was not set at most monitoring sites until May 31-June 6. Treatments targeting first-generation larvae began during the week of June 23.

Summer moths appeared around mid-July and large flights (15-37 moths) continued throughout August. The high summer codling moth pressure in some orchards was an indicator of the ineffective spring generation control due to mistimed applications and/or rain diluting larvicide coverage during the June treatment window. Codling moth flights continued into September, with additional late-season spot treatments required for several sites.

BLACK STEM BORER: The Asian ambrosia beetle *Xylodendrus germanus* was identified on June 4 in an apple tree in a Lafayette County orchard. According to the orchard owner's report, the trunk of the infested tree had at least 20 borer with protruding frass columns indicative of ambrosia beetle infestation. Black stem borer attacks a wide range of fruit trees and hardwoods and has been documented by DATCP in 21 Wisconsin counties since 2013. Until the Lafayette County report, there had been no confirmed cases of apple tree damage in the state.

Orchards in Michigan, Ohio and other northeastern states have had issues with this pest in the last few years, and in western New York, the beetles have reportedly killed large numbers of apple trees.

APPLE MAGGOT: Emergence of flies began in orchards by July 10, two weeks later than in 2018. Counts peaked during the week of July 25-August 7 at most southern and central sites. A few orchards also reported high counts (5-11 per trap) during the last week of August. The season's highest count was 17 flies on a red sphere trap in Crawford County.



Apple maggot fly

Hannes Schuler news.rice.edu

SPOTTED WING DROSOPHILA: The first SWD flies of the season were captured in DATCP traps on June 19 in La Crosse County. This date compares to June 1 in 2018, June 5 in 2017, and June 10 in 2016. Significant SWD fly captures were reported during the last week of June at monitoring sites, and larvae were noticeable in raspberries and other small fruits by mid-July.



Male spotted wing drosophila fly

David Handley extension.umaine.edu

VELVET LONGHORNED BEETLE: A third year of survey work was carried out in 2019 in response to the recent discovery of this potential fruit and landscape tree pest in Milwaukee County. The velvet longhorned beetle (VLB), like other invasive wood-borers, can be harbored in firewood and wood shipping crates and cargo, including furniture. It has been intercepted at many ports and warehouses across the U.S. since 2002. The first Wisconsin detection of VLB occurred in 2017 and surveys in 2018 collected a total of 75 beetles in nine Milwaukee County traps, all near Mitchell International Airport. This year's survey in 14 counties captured 22 beetles in eight traps. The positive traps were in Milwaukee County where VLB is now established, as well as in three new counties: Fond du Lac, Kenosha and Waukesha.

STRAWBERRY LEAF SPOT: Cool, wet spring weather contributed to development of this disease on strawberry plants. Strawberry leaf spot, caused by the fungus *Mycosphaerella fragariae*, results in stunting, leaf drop, and plant mortality. The positive samples were collected from farms in La Crosse, Pierce, and Sauk counties, though this disease was undoubtedly much more common this season.



Strawberry leaf spot

Krista Hamilton DATCP

GRAPE DISEASES: Grape anthracnose, downy mildew and powdery mildew were confirmed on grape foliage from multiple counties surveyed by collaborators from the IPM institute this season. Disease samples were collected from vineyards in Brown, Dane, Outagamie, Richland, Trempealeau, Vernon and Winnebago counties.

EUROPEAN CHERRY FRUIT FLY: A pest detection survey was conducted on the Door Peninsula of northeastern Wisconsin in 2018 and 2019 for the European cherry fruit

fly (ECFF), *Rhagoletis cerasi*. First found in North America in Ontario in 2015 and two years later in New York, ECFF is a pest of economic and quarantine significance that poses a high risk to Door County's \$1.9 million dollar tart cherry crop. Surveys for ECFF were conducted at eight orchards, and included the placement of four yellow sticky traps (32 traps total) baited with ammonium carbonate attractant at each location. No ECFF were captured on any of the traps in either season.



European cherry fruit fly Patrick Derennes pest.ceris.purdue.edu

APIARY INSPECTIONS: Apiary inspectors visited 204 beekeepers this year, opening 3,398 hives for inspection. Based on these voluntary inspections, winter mortality decreased for the second year in a row from 47% in 2017-18 to 32% in 2018-19, which is slightly lower than the 38% national average winter loss for beekeepers during the same time period. Varroa mite was detected in 51% of hives sampled for this pest, compared with 58% last season. Other pests and diseases found include American foulbrood in 0.7% of hives, chalkbrood in 5.9% of hives, European foulbrood in 6.4%, deformed wing virus in 11.8%, sacbrood in 4.8%, and small hive beetle in 6.3% of hives. Inspectors issued 59 apiary inspection certificates for 39,815 migratory hives, primarily destined for California, Florida and Texas to be used for pollination services.

VEGETABLES

SWEDE MIDGE: A DATCP vegetable pest survey in 32 community garden and CSA farms resulted in the first capture of swede midge, *Contarinia nasturtii*, in Dane and Milwaukee counties. The flies were collected on June 17 and July 1 on sticky traps placed in broccoli.

Initial determination of the specimens was made by a DATCP specialist, with verification by an authorized USDA identifier. The positive identifications represent the first detection of invasive swede midge (SM) in Wisconsin and a new state record. This non-native insect is expected to significantly impact brassica production in the state as it becomes more widely established.

In response, vegetable growers—particularly in Dane and Milwaukee counties—are encouraged to increase vigilance for signs of this pest in 2020. Damage symptoms caused by swede midge larval feeding include puckered leaf tissue, brown scarring at the growing points, distorted, twisted leaves, and broccoli and cauliflower plants with blind heads. The single most effective control is rotation to a non-cruciferous crop for 2-3 years. DATCP is planning an expanded survey for swede midge in 2020.



Swede midge larvae Dave Fuller University of Maine Coop Extension

VARIEGATED CUTWORM: Migrant cutworm moths arriving in May produced damaging infestations by mid-June. Several vegetable growers, mainly in southern and eastern Wisconsin, observed severe cutworm feeding on a wide variety of crops. On June 27, a Milwaukee County CSA grower reported experiencing "the worst cutworm infestation in 20 years" of vegetable production. The caterpillars invaded her hoop-houses and attacked seedlings under lights, chewing plants down to the stems. Based on photos received by the DATCP Entomologist, the variegated cutworm was the primary species of concern.

LATE BLIGHT: Disease pressure increased significantly in 2019 due to wet weather, with detections in 18 counties, compared to four counties in 2018. The state's first

infected commercial potato field was confirmed in Wood County on July 17 by the UW Plant Pathology Department. The next find came from a CSA tomato field in La Crosse County surveyed by DATCP on August 2. Additional cases of late blight on both potato and tomato were detected in the following counties: Adams, Barron, Crawford, Green Lake, Jackson, Juneau, Monroe, Polk, Pierce, Portage, Sauk, Shawano, St. Croix, Vernon, Walworth and Waushara. All samples tested by UW from Wisconsin were the US-23 pathogen genotype.



Late blight lesions on tomato

Krista Hamilton DATCP

VEGETABLE DISEASES: Unusually wet conditions this season were very conducive for development of certain bacterial and fungal diseases. Surveys for vegetable diseases in 32 community gardens and CSA farms generated 162 symptomatic plant samples that were at tested at the DATCP Plant Industry Lab. Results were as follows:

Twenty-three of 35 (66%) tomato samples were infected with *Septoria* leaf spot, which was ubiquitous on tomatatoes throughout the state. Early blight (*Alternaria solani*) was diagnosed on tomato from Polk, Portage and Pierce counties, and leaf mold (*Fulvia fulva*) was detected in hoop house grown tomatoes in La Crosse County.

Bacterial diseases on peppers were another common problem. Ten of 14 (71%) pepper samples tested positive for bacterial spot (*Xanthomonas vesicatoria* or *X. euvesicatoria*) and *Syringae* seedling blight and leaf spots (*Pseudomonas syringae*).

Other notable diseases diagnosed were purple blotch (*Alternaria porri*) on garlic, leek and onion from La Crosse

County; garlic rust on Dane County garlic; and black rot (*Xanthomonas campestris*) on a variety of cole crops (broccoli, cauliflower, kale, kohlrabi and red cabbage) from Dane, La Crosse, Pierce and Washington counties.

Lab testing found no evidence of cucumber green mottle mosaic virus (CGMMV), a disease of concern for crop exporters, in cucurbit samples. In addition, 28 samples from Dane, Kewaunee, La Crosse and Polk counties tested negative for potato spindle tuber viroid (PSTVd) and tomato chlorotic dwarf viroid (TCDVd), two more diseases of regulatory significance that are highly transmissible by seed and mechanical means such as touching infected plants.



Bacterial disease symptoms on pepper

Krista Hamilton DATCP

CUCURBIT DOWNY MILDEW: Cucurbit downy mildew (CDM) was diagnosed by the UW in Dane and Vernon counties on August 20 and in Buffalo County on September 5. Infected host plants were butternut squash, cucumber, pumpkin and watermelon. Although cucurbit downy mildew (CDM) produces no direct symptoms on cucumber fruits, the disease increases the risk of sunscald and causes secondary fruit decay. CDM spreads into the northern U.S. in summer on airborne sporangia from infected plants in other states.

BASIL DOWNY MILDEW: This aggressive foliar disease was confirmed in four counties: Dane, La Crosse, Sheboygan and Waukesha. Basil downy mildew (BDM) spreads via wind-dispersed spores, rapidly infecting entire fields and causing complete plant loss. BDM is often present on greenhouse-grown basil in garden centers in the spring, though it may not progress until late summer. Purchasing disease-free plants, promoting airflow, and frequent monitoring of the crop so harvest can occur

quickly once mildew symptoms appear are all important controls. Use of fungicides is not recommended.



Basil downy mildew

Angela Madeiras UMass

NURSERY & FOREST

NURSERY INSPECTION: The Nursery Program licensed 580 nursery growers and 1,139 retailers this year, with personnel performing 813 site inspections statewide. Annual inspections are prioritized for out-of-state shippers and those holding a Plant Health Certificate. The top 10 insects and diseases found this season were, by total number of detections: viruses, powdery mildew, apple scab, leaf spots, Japanese beetle, leafminers, aphids, winter injury, tar spot and rusts. Summarized below are highlights from the 2019 inspections.



Tar spot on maple

Timothy Allen DATCP

RAMORUM BLIGHT: DATCP announced on August 23 the first interception of *Phytophthora ramorum*, or Ramorum blight in Wisconsin, on rhododendron imported

from Washington State. The find resulted from a July trace-forward survey of 59 garden centers and nurseries that received potentially infected stock from the Washington supplier. Wisconsin inspectors collected 43 samples, but only one rhododendron in a Marathon County nursery was positive for the disease.

In late October, another potential Ramorum blight introduction was reported on 'Double Red Knockout' rose plants at Walmart. The roses originated in an Oklahoma nursery where blight-infected plants were found, and all were sold before regulatory actions could be taken.

DATCP and the UW are advising consumers who purchased azaleas, rhododendrons and roses in 2019 to monitor plants for leaf and shoot dieback symptoms next season. Suspect plants may be sent to the UW-Madison Plant Disease Diagnostic Clinic for free testing:

<https://pddc.wisc.edu/sample-collection-and-submission/>.

MAGNOLIA SCALE: Reports from inspectors and homeowners indicate this scale insect pest has become more prevalent in the landscape and on nursery stock in the last 5-6 years. Seven cases of magnolia scale at nursery locations in Kenosha, Washington and Waukesha counties were documented this season.



Magnolia scale

Marcia Wensing DATCP

VIBURNUM LEAF BEETLE: Nursery inspections found 18 cases of the viburnum leaf beetle (VLB) in southeastern Wisconsin in 2019. This newly-established pest feeds exclusively on the leaves of viburnums, and both the adults and larvae cause extreme defoliation and eventual shrub mortality after successive years of infestation. Native viburnums are an important understory component of many Wisconsin woodlands and are at risk as

VLB—which now occurs in Iron, Kenosha, Milwaukee, Ozaukee, Walworth, Waukesha, Washington and Winnebago counties—continues to spread.



Viburnum leaf beetle larvae DATCP Nursery Program

BOXWOOD BLIGHT: Nursery inspectors collected 107 boxwood and pachysandra samples for laboratory testing this year. Nine boxwood samples, including the varieties ‘Green Velvet’ and ‘Korean,’ were positive for boxwood blight. The infected plants came from two different big-box retailers in Dane and Portage counties and two nurseries in Kenosha County. Boxwood blight was also found on shrubs at a Dane County residence in late October, marking the first report of the disease in the Wisconsin landscape.



Boxwood blight symptoms Marcia Wensing DATCP

VIRUSES OF ORNAMENTALS: Plant viruses continued to be one of the most prevalent plant health issues in Wisconsin nurseries this year. Forty-eight percent or 113 of the 234 symptomatic ornamental samples submitted

by inspectors to the Plant Industry Lab for testing in 2019 were positive for at least one virus. The most common were potyviruses (61 positives), followed by hosta virus X (16 positives), tobacco rattle virus (13 positives), and ilarviruses (7 positives). Delphinium plants sent to USDA for further analysis tested positive for potato virus S and a caulimovirus. A table listing the lab’s complete virus test results is provided on page 163.

DATCP enforces a zero tolerance policy for viruses and cautions nursery stock growers and retailers to avoid propagating or selling virus-infected plants.



Potyvirus in Iris Anette Phibbs DATCP

EUROPEAN CHAFER: This destructive lawn grub was identified in Langlade County on July 10 by UW-Madison Entomologist PJ Liesch. The European chafer has been established since 2013 in Door County, where it has caused extensive lawn damage in Sturgeon Bay and surrounding areas. Its larvae are considered a more serious turf pest than the Japanese beetle because they feed later into the fall and earlier in spring, and even resume activity during warm periods in winter.

GYPSY MOTH: An exceptional cold stretch January 29-31, with temperatures plummeting well below the -22°F lethal threshold for gypsy moth, caused high winter mortality in egg masses exposed above the snow line. Consequently, populations in 2019 were down considerably from previous years.

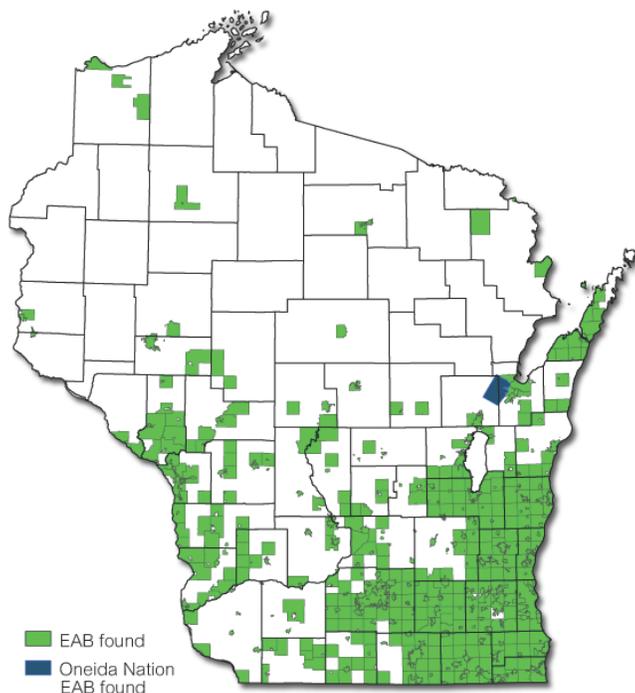
Egg hatch began by May 13 in southern Wisconsin, about two weeks later than normal, and the first moths appeared on July 15 in Dane County. Pheromone traps deployed mainly across western Wisconsin captured a total of 52,396 male moths (in 10,964 traps) this season,

a sharp decrease from 76,403 moths caught in 2018 and 108,008 in 2017. Currently, 50 of Wisconsin's 72 counties are under quarantine for gypsy moth. No new counties were added to the quarantine in 2019.

SPOTTED LANTERNFLY: Surveys for this pest on tree-of-heaven at 31 urban sites in Dane, Grant, Milwaukee and Sauk counties, as well as on fruit trees and grape vines in 18 apple orchards and 12 vineyards, yielded negative results. Spotted lanternfly has not yet been found in the Wisconsin.

EMERALD ASH BORER: Fifty-two Wisconsin counties are now infested with EAB. New detections in 2019 included Pierce County (River Falls) in July, one new tribal find on Oneida Nation land in August, and 52 more municipal confirmations. The coordinated state and federal EAB trapping program was discontinued after DATCP enacted a statewide quarantine in 2018.

EAB Detections 2008 to 2019



Wisconsin Department of Agriculture, Trade and Consumer Protection



LEAF BEETLE: Needle feeding damage by the native leaf beetle *Cryptocephalus schreibersii* was observed in August on balsam, Canaan, and Fraser fir trees in Chippewa and Eau Claire counties. The damage caused browning of current-year needles and was significant enough to make the Christmas trees unsaleable in certain fields.

More commonly associated with pine, this beetle has not been widely collected in the state. Prior reports of *C. schreibersii* are from pine in Dane and Iowa County, as well as Fraser fir in Trempealeau County.



Cryptocephalus leaf beetle

Renee Pinski DATCP

ELONGATE HEMLOCK SCALE: Hemlocks from three nurseries in Ozaukee and Milwaukee counties were removed from sale in May and July due to elongate hemlock scale (EHS) infestation. The imported plants had been unsuccessfully treated with dinotefuran insecticide, as viable scales could still be found on the plants after treatment. This invasive pest is not known to be established in the state, and there is concern for the Christmas tree industry and native conifers given its broad host range, which includes fir, hemlock, pine and spruce. Last winter, DATCP inspectors intercepted EHS on holiday wreaths and other evergreen decorations at several large chain stores.

WALNUT TWIG BEETLE: A trapping survey to detect the walnut twig beetle was conducted at eight sites in Buffalo, Chippewa, Columbia, Dane, Grant, Iowa, Sauk and Trempealeau counties. Selected trapping locations included five sawmills, two walnut-dominant forestlands, and a walnut plantation. Twenty-six baited Lindgren funnel traps were monitored from mid-May through early September. No beetles were captured. DATCP has conducted surveys for walnut twig beetle since 2011 when an exterior quarantine for thousand cankers disease went into effect.

TABLE 1. CORN ROOTWORM BEETLE SURVEY RESULTS 2010-2019 AVE. NO. OF BEETLES PER PLANT

DISTRICT	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	10-YR
NW	0.3	0.1	0.5	0.7	0.5	0.2	0.5	0.2	0.2	0.1	0.3
NC	0.1	0.1	0.3	0.2	0.2	0.5	0.7	0.2	0.2	0.2	0.3
NE	0.1	0.3	0.6	0.2	0.1	0.2	0.7	0.2	0.4	0.1	0.3
WC	0.4	0.6	0.4	0.4	0.6	0.3	0.6	0.2	0.3	0.3	0.4
C	0.4	0.8	0.5	0.2	0.2	0.5	0.3	0.3	0.2	0.1	0.4
EC	0.3	0.5	0.4	0.3	0.3	0.8	0.4	0.2	0.2	0.2	0.4
SW	0.3	1.1	0.8	0.6	0.9	0.8	0.7	0.3	0.3	0.5	0.6
SC	0.3	1.4	0.9	0.5	0.3	0.8	0.4	0.3	0.3	0.5	0.6
SE	0.2	0.7	0.9	0.8	0.4	0.7	0.2	0.1	0.1	0.1	0.4
STATE AVE.	0.3	0.7	0.6	0.5	0.4	0.6	0.5	0.2	0.2	0.3	0.4

Survey results based on average number of beetles per plant per 10 plants examined.

TABLE 2. EUROPEAN CORN BORER FALL SURVEY RESULTS 2010-2019 AVE. NO. OF LARVAE PER PLANT

DISTRICT	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	10-YR
NW	0.08	0.15	0.04	0.07	0.06	0.03	0.13	0.09	0.02	0.00	0.07
NC	0.02	0.07	0.01	0.02	0.04	0.00	0.08	0.04	0.01	0.01	0.04
NE	0.19	0.13	0.05	0.02	0.01	0.04	0.00	0.00	0.02	0.01	0.06
WC	0.08	0.12	0.09	0.06	0.12	0.03	0.15	0.01	0.05	0.02	0.08
C	0.06	0.05	0.01	0.01	0.00	0.01	0.24	0.02	0.02	0.01	0.05
EC	0.01	0.03	0.01	0.01	0.01	0.04	0.00	0.01	0.01	0.01	0.02
SW	0.12	0.03	0.03	0.06	0.00	0.03	0.14	0.04	0.00	0.01	0.05
SC	0.07	0.20	0.01	0.08	0.01	0.02	0.14	0.06	0.00	0.02	0.06
SE	0.00	0.01	0.00	0.01	0.00	0.00	0.04	0.04	0.01	0.00	0.01
STATE AVE.	0.07	0.09	0.03	0.04	0.03	0.02	0.11	0.03	0.01	0.01	0.05

Survey results based on number of 4th and 5th instar corn borer larvae per plant.

TABLE 3. SOYBEAN PEST SURVEY RESULTS 2019 AVE. NO INSECTS PER 100 SWEEPS

DISTRICT	Bean leaf beetle	Japanese beetle	Northern CRW	Southern CRW	Western CRW	Green Cloverworm	Grasshopper	Stink Bug
NW	0.3	1.5	0.1	0	0	5.2	3.5	0.7
NC	0	0.6	0.1	0.4	0	3	5.8	0.6
NE	1.3	2.7	0	0	0	2	2.6	1
WC	0.1	27	0.9	0.1	0.2	12.8	3.3	1.3
C	1.1	7.9	1.9	0	1.5	2.8	7.2	1.2
EC	NA	NA	NA	NA	NA	NA	NA	NA
SW	0.3	17.3	1.7	0.1	1	1	4.5	1.5
SC	0.2	14.9	1.8	0.1	0	7.1	1.7	0.4
SE	0.1	18.3	7.7	0.1	0.5	16.3	1.1	0.3
STATE AVE.	0.4	14.4	1.8	0.1	0.5	6.6	3.8	1.0

TABLE 4. SURVEY OF VIRUSES IN ORNAMENTALS 2019 PLANT INDUSTRY LABORATORY RESULTS

VIRUS SAMPLES	POTY ¹	HVX ²	TRV ³	ILAR ⁴	CMV ⁵	INSV ⁶	LLCV ⁷	TMV ⁸	TSWV ⁹	CICMoV ¹⁰
No. of positives	61	16	13	7	4	3	1	3	3	2
No. of plants tested	94	81	37	19	44	31	1	38	46	2
Percent of positives	65%	20%	35%	37%	9%	10%	100%	8%	7%	100%

¹Potygroup viruses; ²Tobacco rattle virus; ³Hosta virus X; ⁴Illarvirus group; ⁵Cucumber mosaic virus; ⁶Impatiens necrotic spot virus; ⁷Canna yellow mosaic virus; ⁸Tobacco mosaic virus; ⁹Tomato spotted wilt virus; ¹⁰Clematis chlorotic mottle virus.