

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

The 2016 growing season was remarkable for its favorable weather, an unusually late first frost, and for stunning crop yields never before achieved in the state. After a mild winter and the second-wettest March on record, drier conditions in April supported early and rapid planting. Although May featured intervals of cool weather, corn and soybean planting was completed 1-2 weeks ahead of historical averages. Optimal June heat and precipitation accelerated plant development, while July growing conditions maintained exceptional crop prospects. By July 31, Wisconsin led the nation with the highest percentage of corn (87%) and soybeans (88%) in either good or excellent condition. Mid-August and September downpours drenched fields and increased disease pressure, but abnormal October heat facilitated the harvest of row crops across the state. Late-season warmth extended into November and the latest first frost ever recorded in La Crosse occurred on November 9, surpassing the previous record of November 7, 1900. At the close of the 2016 season, Wisconsin producers expect to harvest an unprecedented 549 million bushels of corn and 101 million bushels of soybeans.

PEST HIGHLIGHTS

CORN ROOTWORM: Beetle counts decreased in 2016, though not uniformly. Populations were considerably

lower than 2015 levels across southern, central and east-central Wisconsin, while counts in the three northern districts and west-central area exceeded both last year's populations and the 10-year average. The annual survey found a state average of 0.5 beetles per plant, a decline from 0.6 per plant in 2015. Results of the survey indicate generally lower rootworm pressure for southern and central Wisconsin in 2017. Larval root damage could be elevated across the northern areas next season.

BROWN MARMORATED STINK BUG: BMSB populations are now firmly established in Dane and Rock counties. A collaborative monitoring survey by DATCP, UW and the IPM Institute resulted in the capture of 185 adult and nymph specimens in seven pyramid traps in south-central Wisconsin. The highest cumulative individual trap count of 80 stink bugs was documented in an orchard near Verona in Dane County. BMSB was found for the first time on apples in the state this season and its status could soon intensify from an urban nuisance to agricultural pest.

CORN TAR SPOT: Corn leaf samples from Green and Iowa counties tested positive for the tar spot fungus in 2016. The Green County sample was collected on September 12 and diagnosed by the Plant Industry Lab, with confirmation by an authorized USDA mycologist. A second Iowa County sample was confirmed by the UW Plant Disease Diagnostic Clinic on September 20. Tar

spot of corn was first reported in the United States in 2015 in Indiana, and found later that season in Illinois. In 2016, the disease was again found in Indiana and Illinois, as well as in Iowa, Florida, Michigan and Wisconsin. Prior to the Indiana finding, tar spot was known to occur only in Latin America.

LILY LEAF BEETLE: This newly-established invasive pest was found in early August by a resident of Plover in Portage County, marking the southernmost detection of lily leaf beetle in the state. The northernmost record of the beetle is from Merrill in Lincoln County. Lily leaf beetle was first discovered in Wisconsin in 2014 and reproducing populations of this striking red insect currently exist in Lincoln, Marathon and Portage counties.



Lily leaf beetle

Warrener flickr.com

WESTERN BEAN CUTWORM: Moth numbers returned to moderate levels after a three-year low. The 2016 survey average count of 20 moths per trap was a noteworthy increase from seven per trap in 2015 and comparable to the 12-year average of 23 moths per trap. Larval infestations resulting from the flight were also more common this season, with larvae found in about 9% of the 458 cornfields sampled in August and September.

TWO-BANDED JAPANESE WEEVIL: A new state record was established in Dane County on August 5 following a Madison resident's report of numerous specimens on various ornamental plants. This detection marked the first confirmed account of the invasive Asian beetle in Wisconsin. The weevils were observed on columbine, coral bells, Japanese anemone, ligularia, pulmonaria, Siberian bugloss, snow-on-the-mountain, spirea, rock iris and assorted weeds. There has been no indication that infestations have spread beyond the Madison area.

JAPANESE BEETLE: Populations were the highest in several years. Above-average rainfall, which favors the larval stages, and lack of natural controls appear to have been contributing factors to the abundance of beetles in 2016.



Japanese beetle

Benimoto flickr.com

FORAGES & GRAINS

POTATO LEAFHOPPER: Populations in alfalfa remained low to moderate all season long. Migrants first arrived in Wisconsin during the week of May 19-25 and were distributed in low numbers across the southern half of the state by early June. Nymphs appeared in second crop alfalfa by June 14. Economic counts of two or more leafhoppers per sweep were not observed in any of the 591 alfalfa fields surveyed in 2016, and leafhopper control was not needed.

ALFALFA WEEVIL: Although a wet weather pattern in late May disrupted the first alfalfa harvest and permitted weevil populations to escalate, few growers reported significant problems. Larval emergence began in southern Wisconsin by May 11 and weevil defoliation subsided by late June as larvae pupated.

PEA APHID: Counts peaked at 28 aphids per sweep during the last week of May then abruptly declined after the first cutting. Surveys yielded very low aphid populations for the balance of the season and no direct damage to alfalfa was attributed to this pest in 2016.

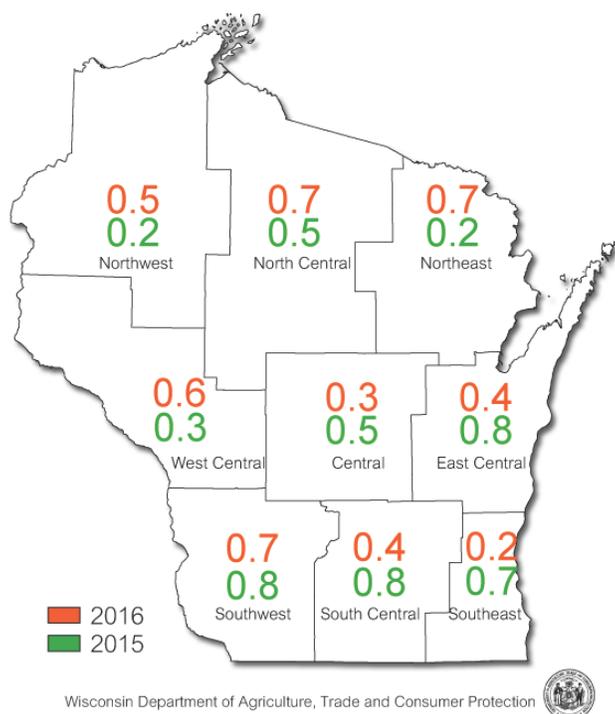
CORN

CORN ROOTWORM: Review of annual beetle survey data shows that populations decreased from 2015 levels

across southern, central and east-central Wisconsin, while beetle counts in the west-central and northern counties were markedly higher. Averages declined in five of the nine crop districts and increased in four. The largest decreases were found in the south-central and southeast districts where averages fell sharply from 0.8 to 0.4 beetles per plant and from 0.7 to 0.2 beetles per plant, respectively. By contrast, the survey found substantially higher averages in west-central and northern Wisconsin, particularly in the northeast where the district count more than tripled from 0.2 to 0.7 beetles per plant. Despite regional increases, the 2016 state average of 0.5 beetles per plant still represents a decrease from the 2015 average of 0.6 per plant.

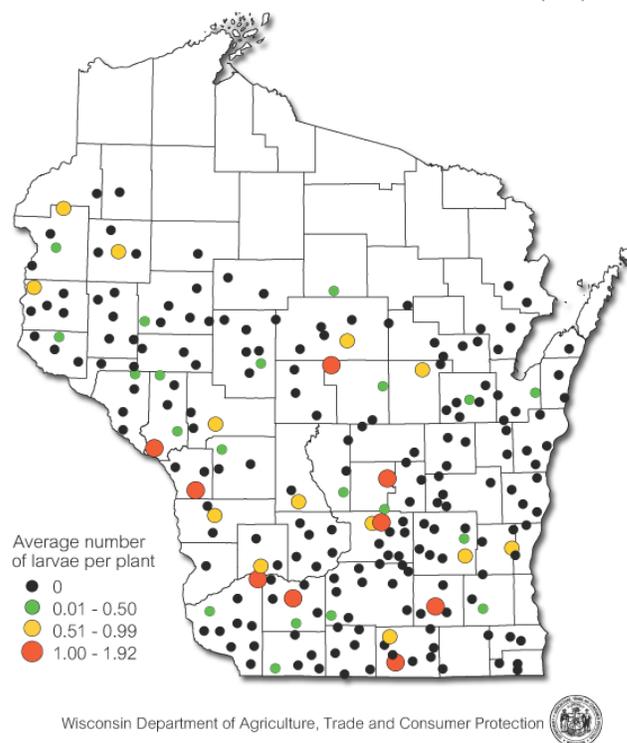
Results of the survey suggest a greater threat of larval rootworm damage to non-Bt continuous corn in the northern and west-central counties next season, while beetle pressure may be lower across the southern, central and east-central areas.

Average Number of Corn Rootworm Beetles per Plant



population increases from 2015 were documented in seven of the nine crop districts, all except the east-central and northeast regions. Larval densities in the central area rose to 0.24 borer per plant, or 24 per 100 plants, the highest average recorded in that area since 2007. Although more sites had economic averages above 1.0 larva per plant than in recent years, and second-generation larvae were detected in 49 of the 229 fields (21%) surveyed compared to 14% last fall, the very low state average of 0.11 borer per plant indicates that Bt corn continues to suppress corn borer populations in Wisconsin.

European Corn Borer Survey Results 2016
State Ave. = 0.11 borer per plant



BLACK CUTWORM: Migrants began arriving in the state by March 29 and an initial cutting date of May 20 was anticipated based on an April 17 biofix. The spring trapping survey registered 1,835 moths in 43 traps from March 15-June 1, with a peak from April 21-May 4. Light infestations developed in corn by early June as a result of the migration and favorable field conditions, but significant injury was not reported or observed.

WESTERN BEAN CUTWORM: Moth counts increased moderately after a three-year collapse. The state cumulative capture of 1,530 moths in 75 traps (20 per trap) was a substantial increase from the 644 in 96 traps (seven per trap) moths collected last season, yet moderate in comparison to counts registered during the 2007-

EUROPEAN CORN BORER: An increase in conventional corn acreage due to lower commodity prices apparently favored larval populations this fall. The 75th annual larval abundance survey in September and October found a state average of 0.11 borer per plant, an increase from last year's historical low of 0.02 borer per plant. Minor

2012 surveys and the 12-year average of 23 moths per trap. The highest individual count for the nine-week monitoring period was 145 moths near Markesan in Green Lake County. Larvae were also more common than anticipated this season and infested approximately 9% of the 458 corn sites surveyed in August and September. Damage to both traited and non-traited corn hybrids was reported.



Western bean cutworm larva

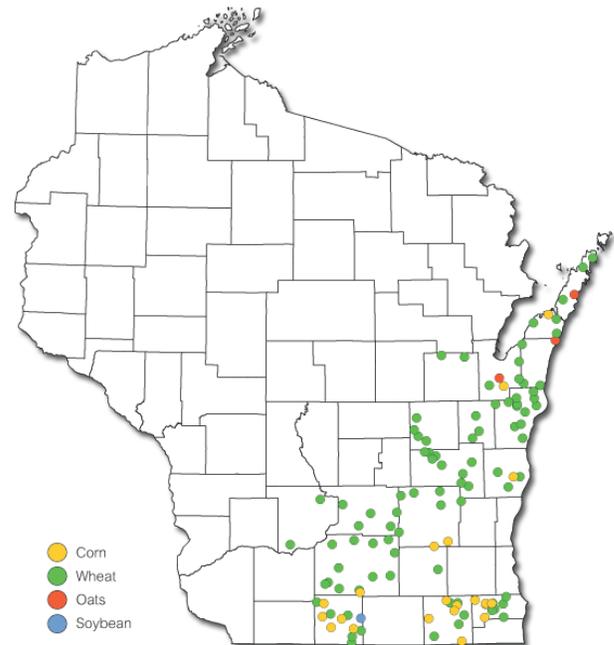
Krista Hamilton DATCP

CORN EARWORM: A late-season migration yielded a cumulative total of 6,402 moths in 16 traps, with a well-defined peak from August 18-31. Almost one-third of the moths (31%) were captured at the Ripon monitoring site during the last week of August. Compared to 2015, the migration was larger and lengthier, with the heaviest flights concentrated in Columbia and Fond du Lac counties. Late sweet corn and other susceptible crops such as tomatoes and snap beans remained under a moderate to severe threat until mid-September.

CEREAL CYST NEMATODES: Eighty-nine soil samples collected from wheat, 21 samples from corn, three from oats, and one sample from a soybean field were analyzed at the Plant Industry Lab for cereal cyst nematode, Mediterranean cereal cyst nematode, and Mexican corn cyst nematode. All 114 soil samples were negative for the three target exotic species. Although no targets were detected, 28% of the samples contained non-targets, including *Cactodera rosae*, a cyst nematode pest of barley in Mexico never before reported in the United States. Identification was confirmed by an authorized USDA nematologist. Other nematodes found were the soybean cyst nematode in 29 fields, clover cyst nematode in five fields, and nematodes in the genus *Cactodera* in 12 fields. Sampling was conducted in the state's leading

wheat producing counties: counties: Brown, Calumet, Columbia, Dane, Dodge, Door, Fond du Lac, Green, Jefferson, Kewaunee, Manitowoc, Outagamie, Racine, Rock, Sheboygan, Walworth and Winnebago.

Cereal Cyst Nematode Survey 2016



Wisconsin Department of Agriculture, Trade and Consumer Protection



XANTHOMONAS LEAF BLIGHT: Surveys for this bacterial disease new to the U.S. yielded negative results. Corn leaf samples were collected from 105 fields between August 5 and September 15 and processed at the Plant Industry Lab. One suspect sent to a USDA identifier for definitive confirmation was determined to be negative. *Xanthomonas* is not yet known to occur in Wisconsin. This leaf streak disease causes symptoms similar to gray leaf spot, but *Xanthomonas* cannot be managed with fungicides. It remains unclear how it was introduced into the U.S. or if it will impact corn yields. The USDA-APHIS does not consider *Xanthomonas* to be of quarantine significance.

SOUTHERN RUST: This fungal disease was confirmed in Grant, Lafayette and Rock counties. Its arrival was too late in the season to cause yield losses.

SEED CORN FIELD INSPECTION: Goss's wilt was found in 11 of 78 (14%) corn leaf samples from six Wisconsin counties this year: Dane, Eau Claire, Fond du Lac, Grant, Pierce and Walworth. This represents a marked decrease from 2015 when 15 of 39 (39%) of samples tested positive. Stewart's wilt was not detected in 2016.

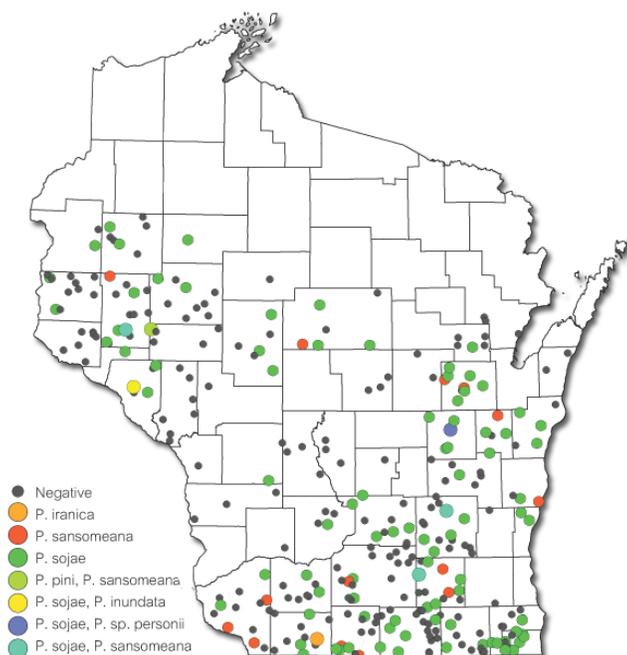
Northern corn leaf blight and anthracnose were very common in seed corn production fields again this season.

SOYBEANS

WHITE MOLD: Above-average rain, favorable June temperatures, and early canopy closure contributed to a greater incidence of white mold than expected in 2016. Disease pressure was highest in the northern half of the state where ratings in mid-August ranged from 0-30%, with most fields showing 10% of plants with symptoms. Late-planted soybeans with extended bloom periods (i.e., longer infection periods) were disproportionately affected.

PHYTOPHTHORA ROOT ROT: During the 2016 survey, 32% (17 of 53) of soybean fields tested positive for root rot disease caused by *Phytophthora sojae*, compared with 38% (19 of 50) in 2015. Positive samples were collected in Barron, Columbia, Crawford, Dodge, Dunn, Green, Jefferson, Marathon, Outagamie, Racine, Rock, and Walworth counties. Also detected was *P. sansomeana* in soybean roots from a Dunn County field. Since 2012, five new *Phytophthora* species have been found in Wisconsin soybeans as a result of this survey: *P. inundata*, *P. iranica*, *P. sp. "personii"*, *P. pini*, and *P. sansomeana*.

Soybean Phytophthora Survey 2010-2016



Wisconsin Department of Agriculture, Trade and Consumer Protection



SOYBEAN APHID: The annual survey found a statewide average count of eight soybean aphids per plant. This average compares to 35 aphids per plant last year and is only marginally higher than the record-low count of seven aphids per plant documented in 2012. One hundred and seventy soybean fields in the R2-R5 growth stages were sampled during a three-week period from July 25-August 15. Aphid densities were below 151 per plant in all fields, and the majority of sites had counts of fewer than 25 aphids per plant. No field sampled had an average exceeding the 250 aphid-per-plant treatment threshold. Results of the survey suggest that aphid populations remained low or moderate in most soybean fields this season and widespread treatment for aphid control was not required.

OBLIQUEBANDED LEAFROLLER: This generalist leafroller was common in Wisconsin soybean fields for the second year in a row. Larvae began emerging by early June and were prevalent in fields throughout July. Most of the larval population pupated by early August. Despite their abundance, the OBLR damage to soybeans noted in 2015 and 2016 was minor and not of economic importance.



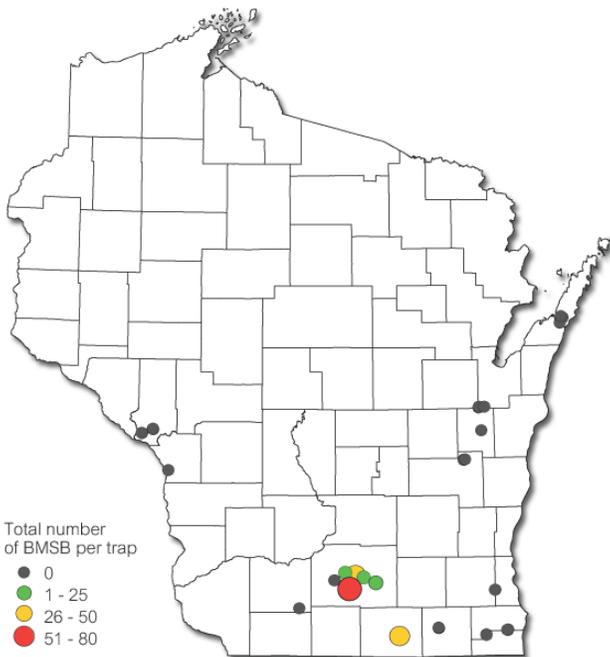
Obliquebanded leafroller larva Eric Birschbach Ag Site Crop Consulting

JAPANESE BEETLE: Defoliation was observed in about 74% of the soybean fields examined in late July and August, indicating that Japanese beetle injury was more widespread than ever. Defoliation estimates were mostly below the 20-30% treatment threshold, but chemical intervention was justified in some instances. Once primarily a fruit and landscape pest, the Japanese beetle has become an increasingly serious threat to Wisconsin's agronomic crops that more soybean and corn growers now have to manage for the first time.

FRUITS

BROWN MARMORATED STINK BUG: DATCP, the UW-Madison, and the IPM Institute carried out the state's first collaborative BMSB monitoring program in 2016. The program consisted of 51 pheromone traps distributed in 12 counties. Juvenile stink bugs were observed in the Allen Centennial Garden on the UW-Madison campus on July 15 and three nymphs were later collected there in a trap on July 27, marking the first time BMSB had been trapped in Wisconsin. BMSB captures were documented at six sites in Dane County and one in Rock County this season. The positive sites included urban areas, apple orchards and pumpkin plantings. As of late November, the total number of BMSB specimens collected was 185, with a high cumulative count of 80 stink bugs in an orchard near Verona. Peak activity and trap counts occurred from October 5-19. All Wisconsin apple growers are urged to plan for BMSB scouting as part of their IPM programs for 2017.

Brown Marmorated Stink Bug Survey 2016
Trap counts July 27 to November 4



Wisconsin Department of Agriculture, Trade and Consumer Protection



APPLE MAGGOT: Counts were variable but mostly light this season. The first flies of 2016 emerged during the week of June 30-July 6 in Fond du Lac and Sheboygan counties. Counts remained low until mid-August when captures peaked at 20 flies per trap per week. The highest weekly counts were registered in orchards with

fruits damaged during hailstorms. Minor fruit damage occurred in a few locations by early September, but serious damage was not reported.

BLUEBERRY MAGGOT: Survey work conducted by DATCP resulted in the first confirmed detection of adult flies in Adams and Sauk counties on August 2, and a new state record. The specimens were captured on yellow sticky board traps set in wild blueberries. Reported from Maine and New Hampshire in 1914, this native fruit fly is an important pest of commercial blueberry crops in the eastern and southern U.S. and eastern Canada. Its larvae, or maggots, develop entirely within the blueberry fruit, causing berries to become soft, watery and unmarketable. This detection could have economic implications for exporters of blueberry plants and fruits to Canada where blueberry maggot is a regulated pest and strict import controls are enforced. Additional survey traps were set in Jackson, Juneau, Marinette, Monroe and Oconto counties, with negative results.



Blueberry maggot fly

Jerry A. Payne USDA ARS www.bugwood.org

CODLING MOTH: Emergence of the first spring moths began near Rochester in Racine County on May 18. Most monitoring locations recorded the first biofix from May 21-25. The spring flight peaked in the southern half of the state by June 15, although counts remained high at many sites for 2-3 more weeks. Signs of larval infestation were evident by late June.

Summer moths appeared in mid-July and counts peaked before the end of the month. A resurgence flight (20 or more moths per trap) was noted in Brown, Grant, Iowa, Kenosha and Racine counties from August 4-11. Heavy flights continued in a few eastern and northern Wisconsin

orchards until early September and additional late-season spot treatments were required in orchard blocks where codling moths remained abundant.



Codling moth larva and damage

www.agric.wa.gov.au

JAPANESE BEETLE: Reports indicated higher-than-normal populations this year. Neem oil applications made before most of the beetles began emerging in July provided temporary repellent activity, but conventional contact pyrethroid insecticides were also required for control. Beetles remained abundant for 10 weeks. The largest numbers appeared during the latter half of July into August and a decline was not noted until September.

APIARY INSPECTION: Apiary Program specialists visited 164 beekeepers this year, opening 2,208 hives for inspection. Based on these voluntary inspections, winter mortality was down from 57% in 2014-2015 to 48% in 2015-2016, though reported losses are still very high. Varroa mites were detected in 68% of hives sampled, compared with 71% positive last season. Other pests and diseases found include American foul brood in 1.2% of hives, chalkbrood in 2.8% of hives, European foul brood in 0.3%, deformed wing virus in 7.3%, sacbrood in 0.4%, and small hive beetle in 7.5% of hives. Inspectors issued 55 apiary inspection certificates for 28,232 migratory hives primarily destined for California, Florida and Texas to be used for pollination services.

VEGETABLES

LATE BLIGHT: The state's first case of potato late blight in 2016 was confirmed by the UW on a Polk County farm on August 15, much later than the June 23 first detection in 2015. Two additional cases were found in August: one in

Dane County on August 18 (tomato) and another at a Polk County farm on August 22 (tomato). No new finds were reported until September 24 when a tomato plant from Juneau County tested positive. Late blight was subsequently confirmed in Crawford County on October 3 (potato and tomato). This disease was relatively rare in 2016 and did not develop in the state's main potato growing areas. Only four counties had confirmed reports this year, far fewer than the 23 counties with documented cases in 2015.



Late blight symptoms on tomato leaves

Sandy Feather Penn State

PHYTOPHTHORA NICOTIANAE: The questionable "late blight" reported by UW from Adams County in July was determined by the DATCP Plant Industry Lab to be caused by *Phytophthora nicotianae* and not the late blight pathogen *Phytophthora infestans*. Potatoes infected with *P. nicotianae* may exhibit foliar symptoms similar to late blight, but this *Phytophthora* species does not have the same devastating effect on production.

NURSERY & FOREST

NURSERY INSPECTION: Nursery Program personnel inspected 331 nursery grower fields this year, representing a large percentage of the production of the 624 licensed nursery growers in the state. Staff also conducted inspections at 527 sites selected from Wisconsin's 1,142 licensed nursery dealers. The top 10 insect and plant diseases found in 2016 were, by total number of detections: viruses, leafspots, powdery mildew, Japanese beetle, non-viable stock, mites, aphids, rusts, apple scab, and chlorosis/nutrient deficiencies. Inspectors issued 151 Plant Health Certificates for the shipment and export of nursery stock.

VIRUSES IN ORNAMENTALS: Laboratory testing of ornamentals from Wisconsin greenhouses, nurseries and retailers found potyviruses were the most prevalent plant viruses this season. Nursery inspectors submitted 253 samples to the Plant Industry Lab for diagnosis. Sixty-three percent tested positive for at least one plant virus. Following potyviruses with 87 positives, other common viruses were tobacco rattle virus with 40 positives, clematis chlorotic mottle virus with 14 positives and hosta virus X with nine positives. Greenhouse producers and nurseries cooperated with inspectors by removing all infected plant material from sale. Results of the survey are summarized in the table on page 143.



Tobacco rattle virus on bleeding heart

Anette Phibbs DATCP

INVASIVE SPECIES RULE: DATCP inspectors documented 90 violations at 130 nursery locations this season, a sharp increase from 43 locations in 2015, 13 in 2014, and 19 in 2013. The most frequently intercepted invasives were aquatic forget-me-not, Bishops goutweed, black alder, burning bush, Japanese barberry, ribbon grass and Siberian peashrub, all of which are prohibited or restricted in Wisconsin under the Chapter NR 40 Invasive Species Rule.

BOXWOOD BLIGHT: A major concern to the nursery industry, this fungal disease affecting boxwoods was not detected in any of the five boxwood samples submitted for testing in 2016.

LECANIUM SCALE: Populations were extremely heavy on a wide variety of hardwood trees across the northern regions of the state in June and July. Severe branch mortality, crown dieback and honeydew accumulation on branches and leaves were reported in Brown, Door, Kewaunee, Langlade, Lincoln, Marinette, Oconto,

Oneida, Shawano, St. Croix and Vilas counties. Another species of soft scale, magnolia scale, was also abundant on magnolia trees and shrubs for the second year in a row.



Lecanium scale on hackberry

Konnie Jerabek DATCP

SUDDEN OAK DEATH: One hundred and eight plant samples collected from 51 nurseries were tested for SOD at the Plant Industry Lab; all were negative for this regulated disease. Sudden oak death has not been found in Wisconsin.

IMPATIENS DOWNY MILDEW: A single Impatiens plant from a Kenosha retailer tested positive for IDM in June and was promptly removed from sale.



Leaf underside with white downy growth

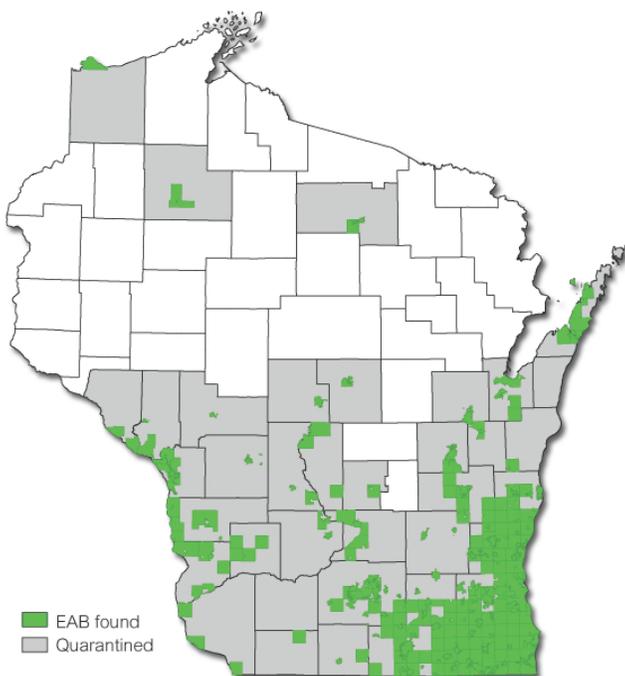
Laura Sanagorski UF-Extension

ROOT AND COLLAR ROT: White root rot, also known as *Dermatophora* root rot, was identified as the cause of mortality in white spruce trees at a Chippewa County nursery. In addition, Swiss pines from Washington County exhibiting root collar rot were infected with *Phytophthora kelmanii*, a pathogen first associated with declining fir

Christmas trees in Grant and Manitowoc counties in 2010. Pine is a new host of this pathogen in Wisconsin.

EMERALD ASH BORER: Detections of EAB surged from 39 in 2015 to 92 this year, bringing the total number of municipal detections since 2008 to 268. Most of the finds were near generally-infested areas in the southeast where EAB is now well established. Other infestations were identified in the central and western parts of the state and along the Mississippi and Wisconsin Rivers where EAB populations are still isolated. The cooperative EAB trapping survey consisting of 818 traps in 37 counties resulted in the capture of beetles on four traps, and the first detection of an adult EAB in Sawyer County. EAB was confirmed in five more counties this year: Juneau, Portage, Manitowoc, Sawyer and Wood. The state EAB quarantine expanded in 2016 and is currently comprised of 42 counties in the southern half of Wisconsin, as well as Douglas, Oneida and Sawyer counties in the far north.

Emerald Ash Borer Detections 2008-2016



Wisconsin Department of Agriculture, Trade and Consumer Protection



THOUSAND CANKERS DISEASE (TCD): Twenty-five funnel traps paired with black walnut branch cuttings were deployed in Chippewa, Crawford, Dane, Grant, Iowa, Jefferson, La Crosse, Richland, Rock, Sauk, Trempealeau, Vernon and Walworth counties to detect TCD. Survey locations included wood disposal sites and

sawmills receiving black walnut logs from TCD-infested states. No walnut twig beetles were captured in survey traps. Processing of walnut branch cuttings for beetle galleries and signs of the TCD fungus is still underway.



TCD cankers and beetle galleries Ned Tisserat CSU www.bugwood.org

GYPSY MOTH: Moth counts decreased significantly in 2016. The state trapping program recorded a total capture of 86,462 male moths in 11,383 traps, a major decline from previous years. Program coordinators attribute the lower moth numbers to a wet spring with intervals of cold weather, as well as to the fact fewer traps were set this year. The season's highest counts were in Bayfield (11,441 moths), Juneau (8,551 moths), and Sauk counties (7,740 moths). No surveyed county reported zero moths.

The DATCP Slow the Spread Program treated a total of 165,948 acres at 86 sites in 19 counties from May 12-July 18. Btk was applied to 26,822 acres and mating disruption flakes covered 175,842 acres. The DNR Suppression Program also treated two sites totaling 102 acres in Rock and Sauk counties with Btk. There were no eradication sites or NPV treatments this year, and no new counties were added to the 50-county Wisconsin Gypsy Moth Quarantine.

EXOTIC BEETLE SURVEY: Seven species of exotic bark- and wood-boring beetles were surveyed for at 10 eastern Wisconsin port locations in Brown, Door, Kenosha, Kewaunee, Manitowoc, Marinette, Milwaukee, Ozaukee, Racine and Sheboygan counties. The survey involved one baited trap per target species at each site, 70 traps total. Processing of trap samples was incomplete as of December 8, but results are negative so far.

CORN ROOTWORM BEETLE SURVEY RESULTS 2007-2016 AVE. NO. OF BEETLES PER PLANT

DISTRICT	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	10-YR
NW	0.4	0.5	0.4	0.3	0.1	0.5	0.7	0.5	0.2	0.5	0.4
NC	0.7	0.9	0.4	0.1	0.1	0.3	0.2	0.2	0.5	0.7	0.4
NE	0.5	0.6	0.6	0.1	0.3	0.6	0.2	0.1	0.2	0.7	0.4
WC	0.4	0.6	0.5	0.4	0.6	0.4	0.4	0.6	0.3	0.6	0.5
C	0.8	0.5	0.4	0.4	0.8	0.5	0.2	0.2	0.5	0.3	0.5
EC	1.4	1.0	0.6	0.3	0.5	0.4	0.3	0.3	0.8	0.4	0.6
SW	0.4	1.1	0.7	0.3	1.1	0.8	0.6	0.9	0.8	0.7	0.7
SC	2.2	1.5	1.1	0.3	1.4	0.9	0.5	0.3	0.8	0.4	0.9
SE	1.0	1.6	0.3	0.2	0.7	0.9	0.8	0.4	0.7	0.2	0.7
STATE AVE.	1.0	1.0	0.6	0.3	0.7	0.6	0.5	0.4	0.6	0.5	0.6

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

EUROPEAN CORN BORER FALL SURVEY RESULTS 2007-2016 AVE. NO. OF LARVAE PER PLANT

DISTRICT	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	10-YR
NW	0.24	0.12	0.06	0.08	0.15	0.04	0.07	0.06	0.03	0.13	0.10
NC	0.35	0.18	0.10	0.02	0.07	0.01	0.02	0.04	0.00	0.08	0.09
NE	0.07	0.12	0.12	0.19	0.13	0.05	0.02	0.01	0.04	0.00	0.08
WC	0.52	0.04	0.10	0.08	0.12	0.09	0.06	0.12	0.03	0.15	0.13
C	0.42	0.11	0.06	0.06	0.05	0.01	0.01	0.00	0.01	0.24	0.10
EC	0.21	0.20	0.09	0.01	0.03	0.01	0.01	0.01	0.04	0.00	0.06
SW	0.28	0.05	0.06	0.12	0.03	0.03	0.06	0.00	0.03	0.14	0.08
SC	0.33	0.07	0.02	0.07	0.20	0.01	0.08	0.01	0.02	0.14	0.10
SE	0.12	0.04	0.00	0.00	0.01	0.00	0.01	0.00	0.00	0.04	0.02
STATE AVE.	0.31	0.09	0.06	0.07	0.09	0.03	0.04	0.03	0.02	0.11	0.09

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

SURVEY OF VIRUSES IN ORNAMENTALS 2016 PLANT INDUSTRY LABORATORY RESULTS

VIRUS SAMPLES	POTY ¹	TRV ²	CICMo ³	HVX ⁴	CMV ⁵	INSV ⁶	TMV ⁷	TSWV ⁸	ArMV ⁹	DMV ¹⁰
No. of positives	87	40	14	9	4	3	2	2	0	1
No. of plants tested	102	91	18	30	38	33	30	32	9	1
Percent of positives	85%	44%	78%	31%	11%	9%	7%	6%	0%	NA

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