

BUREAU OF
PLANT
INDUSTRY

ANNUAL REPORT

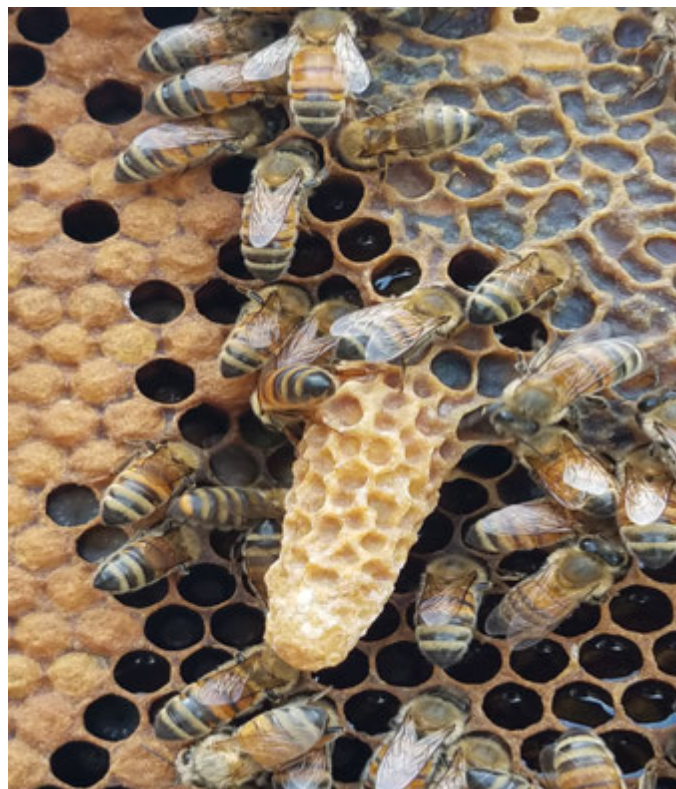
2018



WISCONSIN DEPARTMENT OF AGRICULTURE, TRADE AND CONSUMER PROTECTION

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Plant Industry Bureau

PROGRAMS



Description & Major Duties	2018 Highlights
<p>The Apiary Program monitors the apiculture industry to prevent the introduction and spread of harmful honeybee parasites and diseases. Inspection services are offered to all beekeepers, though emphasis is placed on migratory bee colonies and package-bees entering Wisconsin in spring from states such as Alabama, California, Florida, Georgia, Louisiana, Mississippi, Missouri, Tennessee and Texas, and those hives leaving in fall that require apiary health certification.</p>	<ul style="list-style-type: none"> • 201 beekeepers visited • 3,342 hives opened for inspection • 71 apiary inspection certificates granted
<p>The Christmas Tree Program licenses and inspects Christmas tree growers, certifying trees as being reasonably free of damaging insects and diseases. The program provides a service to interstate and international shippers of Christmas trees who require an inspection certificate prior to shipping. Growers who sell Christmas trees locally also benefit by receiving inspections to inform them of pests and diseases affecting their trees. Staff inspect Christmas trees for signs of regulated pests, such as pine shoot beetle, and search adjacent fence rows and wood lots for evidence of gypsy moth life stage. Staff also inspect wreath and roping producers in the state who request plant health certificates.</p>	<ul style="list-style-type: none"> • 511 Christmas tree fields inspected • Elongate Hemlock Scale and Cryptomeria Scale detected • 45 fields contained gypsy moth egg masses
<p>The Export Certification Program inspects and certifies plant products for interstate or international shipment. Program staff maintain knowledge of commodity-specific plant pest regulations and assist customers in understanding important standards for over 200 countries. The program ensures the safe export of pest-free Wisconsin agricultural products.</p>	<ul style="list-style-type: none"> • 13,288 applications processed • Export to 16 countries
<p>The Firewood Certification Program regulates the movement of firewood into Wisconsin and within the state's borders to limit the spread or introduction of invasive insects and diseases. Transporting firewood into state parks and other state-managed lands from locations farther than 10 miles away is prohibited, unless the firewood has been treated and is obtained from a certified firewood dealer.</p>	<ul style="list-style-type: none"> • 30 dealers certified • 84 dealers certified since the program's inception
<p>The Forest Pests Program works with members of the forest products industry to facilitate compliance with state and federal quarantine regulations related to the movement of certain forest products. They work with individual businesses and enter into compliance agreements, which have limited exemptions to certain parts of the regulation, in exchange for implementing practices designed to mitigate risk.</p>	<ul style="list-style-type: none"> • Velvet Longhorn Beetle detected in Milwaukee • 13 Hemlock Woolly Adelgid compliance agreements signed
<p>The Gypsy Moth Program is a cooperative effort between WI DATCP, WI DNR, USDA-APHIS, USDA-FS, and UW. The program's mission is to detect and treat infestations of the gypsy moth and to slow its spread across the state. Trapping surveys help pinpoint the locations of significant gypsy moth populations and determine potential spots for treatment the following season.</p>	<ul style="list-style-type: none"> • 35 sites sprayed, totaling 76,288 acres • 76,513 males moths captured

The Industrial Hemp Pilot Program must generally maximize opportunity for a person to plant, grow, cultivate, harvest, sample, test, process, transport, transfer, take possession of, sell, import, and export industrial hemp to the greatest extent authorized under federal law. The pilot program is in place to study the growth, cultivation, and marketing of industrial hemp. This is a research pilot program which means growers and processors will be part of the research project and will have requirements, including record-keeping and reporting.

- 245 growers licensed
- 99 processors licensed
- 135 farmers planted hemp
- DATCP collected 295 industrial hemp samples

The Nursery Program provides regulatory inspection of licensed retail and wholesale nurseries to ensure the production of healthy, insect- and disease-free plants. Inspections enforce licensing requirements and issue certificates needed to facilitate the movement of nursery stock in trade.

- 621 nursery growers & 1,149 nursery dealers licensed
- 727 site inspections

The Plant Industry Bureau Laboratory provides plant disease and insect pest diagnostic services to the Christmas Tree, Nursery, and Pest Survey Programs, among others. The PIB Lab also designs and leads statewide disease and insect pest surveys, performs testing for phytosanitary certification necessary for domestic and international export of certain plants, and differentiates disease from chemical injury for the Environmental Enforcement Section of the Agrichemical Management Bureau.

- Processed 1,831 samples , 989 disease & nematode and 842 insect pest
- Detected boxwood blight in Wisconsin

The Potato Program includes surveys for Potato Rot Nematode (PRN), late blight response, and coordination of Wisconsin's seed potato certification program with UW-Madison. This program has played a major role in preventing the spread of PRN since 1953. To date, PRN has never been intercepted in shipments of commercially grown potatoes or seed potatoes from Wisconsin . The program targets first-year seed production fields for priority sampling in addition to fields with a history of infestation. Previously infested fields are released from quarantine after two successive potato crops that show no evidence of PRN.

- 15 potato fields inspected
- 1 previously infected field released to certified seed
- 3,048.95 acres tested to date

The Pest Survey Program conducts field surveys to detect new or exotic plant pests and to assess distribution, abundance or incidence or endemic insects, plant diseases, and nematodes affecting Wisconsin. Information acquired through these surveys is used to alert growers and agriculture professionals to pest occurrence and outbreaks, determine pest trends influencing agricultural and management practices, and to certify Wisconsin plants and plant products entering trade. The program also participates in plant disease and insect survey projects in cooperation with the USDA and University of Wisconsin.

- Corn Rootworm capture was historically low
- Cucurbit downy mildew detected for the 1st time

The Seed Program monitors and enforces labeling, germination, and purity requirements to assure quality agricultural seed is distributed and sold in Wisconsin. Seed that does not conform to state standards may be removed from the marketplace and labelers may be subject to penalties. Field inspectors in the program perform a range of duties, such as evaluating labels for compliance, issuing stop sale orders, and collecting samples for analysis.

- 743 seed labeler licenses issued
- 193 license-holders inspected
- 371 samples collected

EXPORT CERTIFICATION PROGRAM

2018 PHYTSANITARY CERTIFICATION PROGRAM SUMMARY: The Phytosanitary Certification Program serves Wisconsin exporters of plants and plant commodities by certifying their shipments as free from regulated pests. In 2018 the program was responsible for the export of over \$482 million in plants and plant products. The total number of certificates (phytos) issued was 13,288. That was an increase of 2,926 from 2017. China, Southeast Asia (Indonesia, Malaysia, Philippines, Thailand), Vietnam, and Taiwan remained top destination countries for phytos issued. The export of grain, including corn and soybeans, accounted for the largest percentage (52%), followed by wood products (38%), fruit (4%), potatoes (2%), and agricultural seed (2%). No Wisconsin commodities were rejected or destroyed at destination ports in 2018.

Table 1: Federal Certificates

Application/ Certificate Status	2017 # of Applications	2017 % of Total Applications	2018 # of Applications	2018 % of Total Applications
Canceled	30	0%	54	0%
Printed	7,776	75%	9,283	70%
Replaced	1,746	17%	2,486	19%
Returned	28	0%	28	0%
Voided	644	6%	1,229	9%
Work in Progress	138	1%	208	2%
Total Applications	10,362	10,196 = 98%	13,288	13,052 = 98%

HIGHLIGHTS

WI exported to 16 countries in 2018
 Total export product value was \$482,879,062
 Top export commodity was soybean grain

Figure 1: Federal and State Phytosanitary Certificate 7 Year Look
(includes replacements)

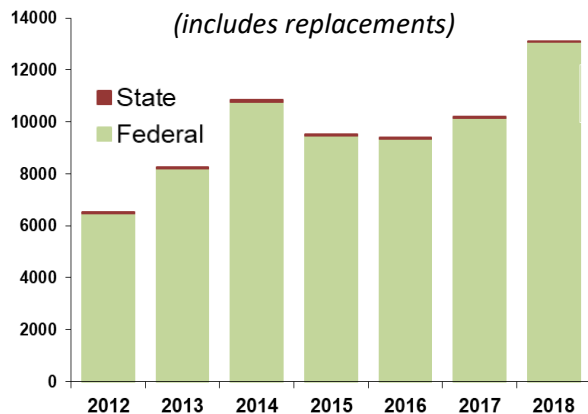
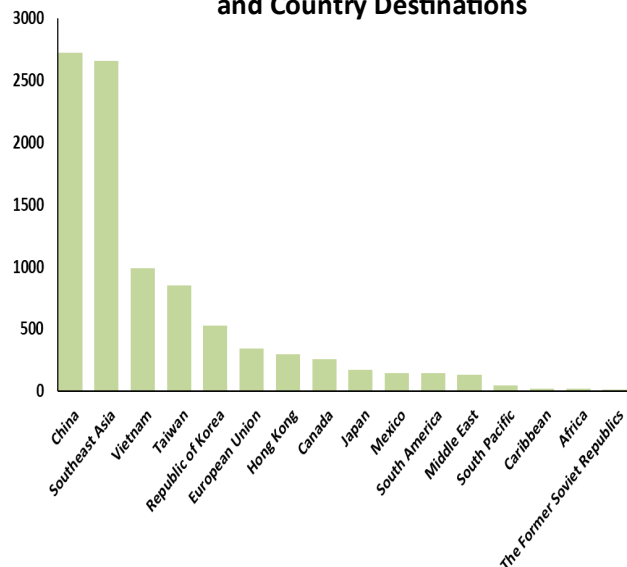
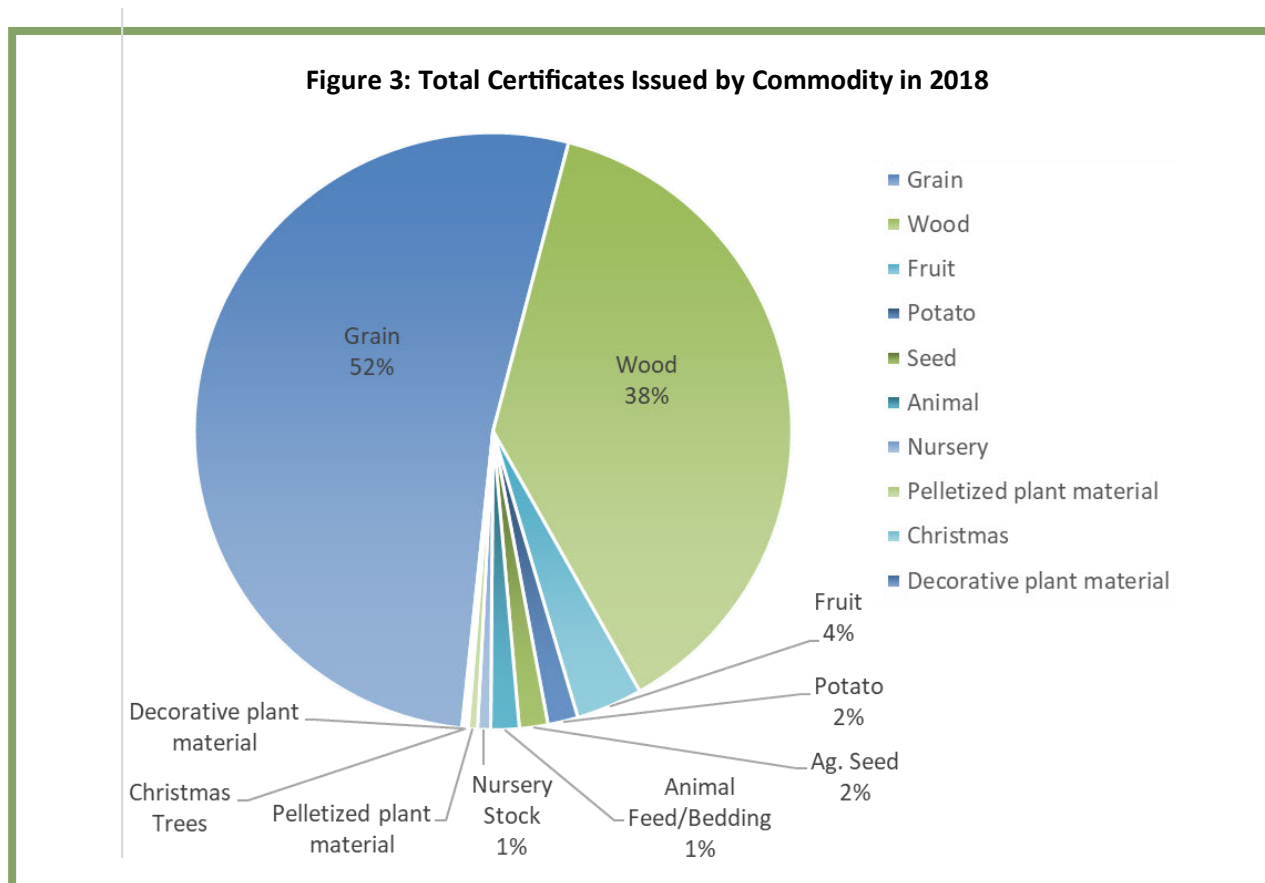


Figure 2: Total Certificates Issued and Country Destinations





2018 Seed Field Inspection Summary: Crops grown for seed export (e.g. corn, garden bean, onion, soybean, and tomato) are inspected by DATCP during the growing season for pests and diseases of regulatory significance. Field inspection services are provided to seed companies and growers requesting assistance in meeting phytosanitary requirements of their international customers. In 2018, 97 seed production fields on 1112 acres were inspected for a range of bacterial, fungal, and viral diseases. Seed crops inspected include corn, soybean, onion, eggplant, garden bean, pepper, squash, sunflower, tomatillo, tomato, watermelon, and intermediate wheatgrass. Intended countries of export include Argentina, Australia, Brazil, Canada, Chile, China, EU, Israel, Japan, Kazakhstan, Malaysia, Mexico, New Zealand, Peru, Russia, South Africa, Thailand, Turkey, Ukraine, and Uruguay.

CHRISTMAS TREE PROGRAM

INSPECTIONS OF CHRISTMAS TREES begin once the gypsy moth egg mass deposition is complete, typically after September 1. In addition to Christmas trees, staff inspect fence rows and wood lots adjacent to each field for evidence of gypsy moth life stages as well as indicators of pine shoot beetle. Christmas tree growers who plan to ship trees interstate and/or request a plant health certificate are the focus of high-priority inspections.

Field location information is collected from growers and entered into a database. Support from the Gypsy Moth Trapping Program provides county-level gypsy moth trap count maps (Figure 11) that are used to prioritize inspections and inform growers of gypsy moth populations in the area. Field inspection reports of pest incidence and severity levels are provided to growers, along with diagnoses for symptomatic plant samples submitted to the DATCP Plant Industry Lab.

TOP 10 CHRISTMAS TREE PESTS FOUND IN 2018

Diseases and abiotic factors: winter injury (68), broom rust of fir (64), white pine blister rust (55), Lirula needlecast (53), root rot (48), mortality (41), needlecast (38), Chlorosis (33), Rhizosphaera on spruce (31), Rhizosphaera on fir (29).

Insects/Pests: balsam twig aphid (125), white pine weevil (56), balsam gall midge (21), deer damage (38), Zimmerman pine moth (21), ants (16), pine needle scale (14), spruce spider mite (14), Pales weevil (10), aphids (9).

starting around Thanksgiving and ending at Christmas, inspectors inspect Christmas tree lots to survey for pests and diseases, ensure trees are free from regulated pests, and Christmas tree growers selling trees have the appropriate license with DATCP. In 2018, 75 Christmas tree lots were inspected. Of the 75 lots, 19 had material infested with Elongate Hemlock Scale (EHS) from four different NC suppliers. A wreath maker in Marathon County received boughs from a supplier in VA that also contained EHS. Pest Abatement Orders were issued for all material with EHS, material was removed from sale and landfilled or burned.

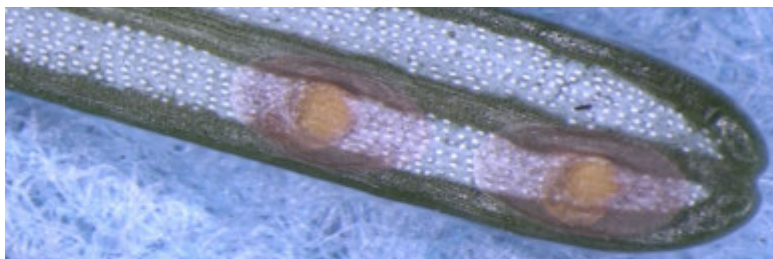
Table 2: Christmas Tree Inspection Finds, 2002-2018

Year	# of Fields Inspected	# of Fields with Gypsy Moth	# of Fields with Pine Shoot Beetle
2002	487	35	0
2003	600	61	0
2004	703	20	1
2005	661	34	0
2006	836	13	0
2007	814	45	9
2008	736	39	0
2009	617	26	2
2010	663	20	1
2011	689	18	3
2012	702	6	6
2013	767	10	0
2014	667	11	2
2015	679	10	6
2016	553	15	5
2017	673	17	15
2018	511	45	1



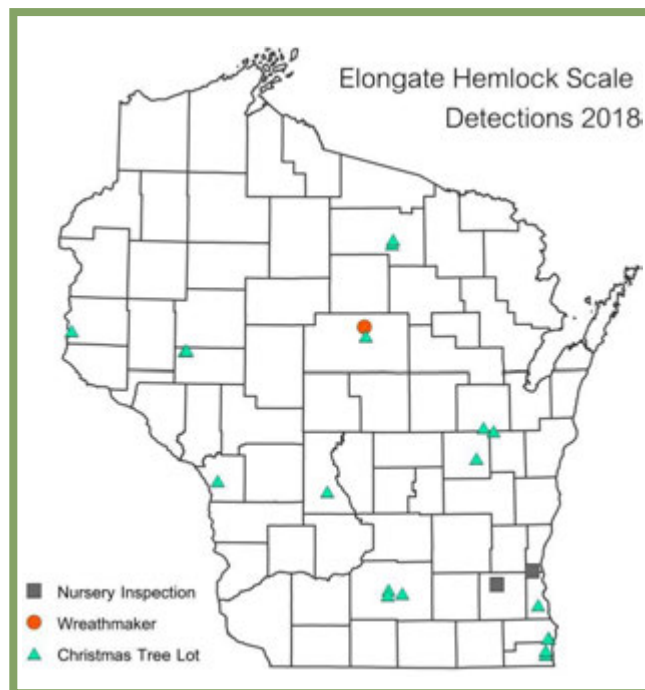
Male and female Elongate Hemlock Scale (*Fiorinia externa*) found on infested material in Wisconsin. Males produce a white cocoon and females have dark brown waxy coating.

NOTEWORTHY PEST ID: In addition to EHS detections, another non-native armored scale, Cryptomeria scale (*Aspidiotus cryptomeriae*), was detected for the first time in Wisconsin. Fir wreath material sourced from North Carolina was found during a Dane County lot inspection, with both EHS and Cryptomeria scale found on the underside of needles. Similar to EHS, Cryptomeria scale feeding often leads to needle drop and decline, however it is hard to control with pesticides due to its protective waxy covering. Infested material was removed from sale.



Cryptomeria scale found on infested fir in Wisconsin

Figure 4: EHS Detections



THE NURSERY PROGRAM

NURSERY INSPECTION: The Nursery Program licensed 621 nursery growers and 1,149 retailers this year, with personnel performing 689 site inspections statewide. Annual inspections are prioritized for out-of-state shippers and those holding a Plant Health Certificate. The program's goal is to inspect all licensees at least once every three years. The top 10 pests and disorders found this season were, by total number of detections: virus symptoms, leaf spots, powdery mildew, Japanese beetle, rusts, leafminers, apple scab, potyvirus, anthracnose, and non-viable nursery stock. The following are some highlights from the 2018 inspections.

BOXWOOD BLIGHT: This devastating fungal disease of boxwood was found for the first time in Wisconsin in July, at a Kenosha County production nursery. This led to an extensive delimitation survey and the collection of 165 *Buxus* and *Pachysandra* samples from the nursery and its satellite nurseries. The samples were screened with microscopy at the PIB Lab and the initial positive verified by the USDA Mycologist. Two blocks of one field in the Kenosha County nursery were found to have boxwood blight. All infected plants were destroyed and the blocks scorched to eradicate the pathogen. Surrounding production blocks were placed on hold pending monitoring and re-inspection in 2019.

Independent from the Kenosha find, another potential introduction occurred on the boxwood variety "Graham Blandly," grown out of state and distributed by a Midwest big box store. The variety was recalled from eight Wisconsin locations. Another 50 suspect boxwoods were pulled from 17 other Wisconsin nurseries, bringing the total to 215 samples tested this season. None of the additional samples and nurseries were positive for boxwood blight. The majority of boxwoods submitted were symptomatic, but the PIB Lab determined the plants were infected with other common diseases such as *Volutella* blight, *Macrophoma* blight, and *Fusarium* wilt.

In response to the recent boxwood blight cases, nurseries in Wisconsin have been encouraged to enter into Boxwood Blight Cleanliness Program Agreements with DATCP. The agreement is based on best management practices developed cooperatively by industry, researchers and government groups, when boxwood blight first appeared in U.S. in 2011.

621 nursery growers and 1,149 nursery dealers were licensed, and 689 site inspections were preformed in 2018



Boxwood blight on a boxwood lab sample (above) and on a nursery shrub (below), note the fallen brown foliage





INVASIVE SPECIES RULE: Invasive plants prohibited or restricted in Wisconsin under the Chapter NR 40 Invasive Species Rule were found at 102 nursery locations this season. The most common were Amur maple, Chinese wisteria (pictured on the left), Japanese barberry, moneywort, ribbon grass or gardener's garters, and woodland forget-me-not.

Nursery managers are advised to review the invasive species rule prior to ordering plants for the 2019 season. The list currently includes 68 prohibited species, 63 restricted species, and 14 split-listed species. One important rule update in 2018 was the expiration of the 3-year phase-out period for restricted herbaceous plants on May 1, 2018. The 5-year phase out period for restricted trees and shrubs expires May 1, 2020. No restricted plants may be propagated or bought in for re-sale; only trees and shrubs that were actively growing in Wisconsin prior to May 1, 2015 can continue to be sold till the end of their phase-out period.



VIBURNUM LEAF BEETLE: An adult beetle (pictured on the left) was collected in August on an arrowwood viburnum shrub in Kenosha County. Kenosha is the fourth Wisconsin county in which viburnum leaf beetle has been detected since 2009, following Milwaukee, Ozaukee, and Winnebago.



LILY LEAF BEETLE: This newly-established invasive beetle was reported in two more counties this season: Langlade and Shawano. Lincoln County is currently the northernmost Wisconsin county in which the lily leaf beetle (pictured on the left) is known to occur with Shawano County marking the eastern boundary. The southernmost record of the beetle is from Portage County. Lily leaf beetle was first discovered in the state in 2014, in Marathon County.



MISCANTHUS SCALE: *Diplachionaspis divergens* (pictured on the left) was identified on Japanese silver grass (*Miscanthus sinensis*) at two nursery dealers in southeastern Wisconsin, both located in Milwaukee County, and two in the north, located in Marathon and Oneida Counties. This non-native scale insect is currently established in Florida, but has not previously been reported in Wisconsin. Infested plants were removed from sale and destroyed to prevent spread of this pest. Although it is unlikely the scale can overwinter in Wisconsin, double-bagging and disposing of any plant suspected of being infested with Miscanthus scale is recommended.

ELONGATE HEMLOCK SCALE: A non-native scale pest, was found on hemlock seedlings growing in two nurseries in Ozaukee and Waukesha counties. In addition to EHS, seedlings were also screened for hemlock woolly adelgid (HWA), but none were found. All EHS-infested plant stock was removed from sale and either destroyed or treated with dinotefuran before being released. Unlike HWA, EHS is not regulated with an external quarantine in Wisconsin. However, this armored scale pest is not known to be established in the state and there is concern for the Christmas tree industry and native hemlocks given its broad host range.

NON-NATIVE AMBROSIA BEETLES: The non-native ambrosia beetle species *Anisandrus maiche* was detected for a second straight year in honey locust liners, this time at a Washington County nursery. In addition to nursery detections, this beetle has been identified in trap bycatch from exotic woodborer and bark beetle surveys since 2016, with over 400 specimens collected across 10 southeastern counties and in Brown County (see Figure 5). Due to the limited number of declining and infested plants observed to date, the full extent of potential damage by this beetle to nursery stock and orchard trees is unknown. However, growers can continue to protect plants with trunk sprays at the onset of adult emergence in the spring, and continue the timing of sprays through egg laying into summer.

Although DATCP has been tracking non-native ambrosia beetles through the trap bycatch of other exotic beetle surveys since 2013, this was the first year a targeted survey was conducted in five Wisconsin nurseries. Besides *A. maiche*, the non-native black stem borer, *Xylosandrus germanus*, and *Xyleborinus saxesenii* were also collected at an Ozaukee County nursery. The granulate ambrosia beetle, *Xylosandrus crassiusculus*, was not found this season, but this species has previously been found at a handful of sawmill locations since 2013. Infestations of *X. germanus*, *X. crassiusculus* and *A. maiche* are still limited in distribution, while *X. saxesenii* has been detected statewide.

Figure 5: Ambrosia Beetle Detections

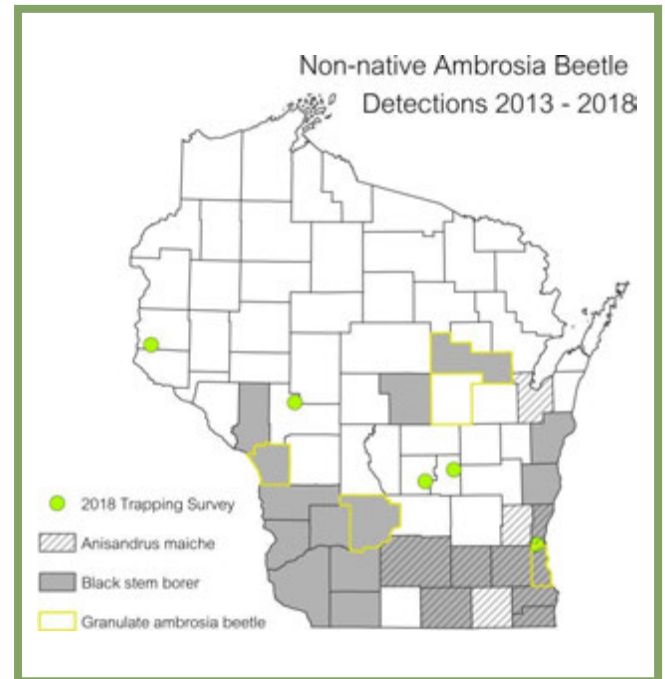
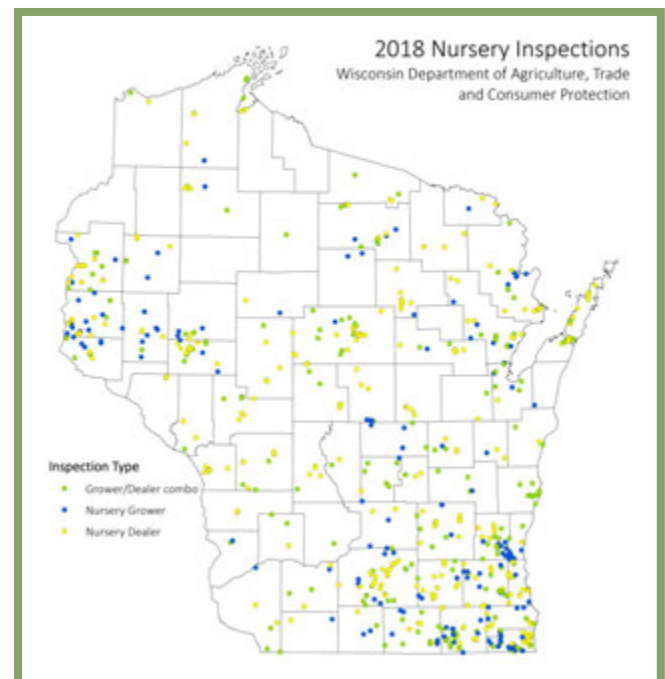


Figure 6: Nursery Inspections



SEED LABELER'S PROGRAM

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DATCP inspects all licensed seed labelers in the state on a three-year rotation while targeting labelers that historically exceed the state violation average. An average of 31% of the licensed labelers have been sampled annually over the Seed Program's 16 year history. During the 2018 season, the Seed Program targeted three companies with poor compliance records for priority sampling in addition to companies who had not been sampled in the past two years. Also targeted for 2018 sampling were grasses, mixtures and legumes.

In 2018 the program issued licenses to a record total of 743 seed labelers (Table 3). Fifty-four seed labelers from 2017 claimed "out of business" or canceled their licenses and fifty-five new licenses were processed. One hundred ninety-two (26%) of licensed labelers were inspected and 111 (15%) were sampled for a total of 371 samples.

The 5.12% total violation rate of 2018 is slightly lower than 2017 and is among the lowest in program history and indicates a continuing trend of improvement in labeling compliance.

2018 had a record number of registered seed labelers: 371 and one of the lowest violation rates in the programs history

Table 3: 10 Year Seed Inspection Results (2009--2018)

Year	Number of Labelers	Number of Samples	Number of Violations	% Violation	% Labelers Inspected	% Labelers Sampled
2009	675	280	27	9.64%	34%	15%
2010	685	308	38	12.34%	33%	15%
2011	725	336	33	9.82%	23%	13%
2012	729	335	38	11.34%	30%	12%
2013	725	375	30	8.00%	26%	14%
2014	730	341	18	5.30%	29%	12%
2015	725	343	16	4.66%	33%	14%
2016	728	374	18	4.8%	28%	16%
2017	742	410	22	5.37%	24%	16%
2018	743	371	17	5.12%	26%	15%

FOREST PESTS

SURVEY:

VELVET LONGHORN BEETLE (VLB): Velvet longhorned beetle (*Trichoferus campestris*) was first detected in Wisconsin in July 2017 with the collection of two beetles in Milwaukee County. Follow-up surveys were conducted in 2018, with 25 baited traps placed in urban industrial and manufacturing settings across 10 eastern Wisconsin counties, including Brown, Dane, Kenosha, Manitowoc, Milwaukee, Ozaukee, Racine, Rock, Sheboygan and Washington. A total of 75 beetles were collected from nine traps, with all collections occurring in Milwaukee County and spanning mid-June through mid-August. Eight of nine positive traps were baited with the pheromone attractant Trichoferone, whereas the remainder of traps were baited with ethanol. Positive traps were found in the general vicinity of Milwaukee Mitchell International Airport (see Figure 7). Continued monitoring and trapping is planned for 2019 due to the largely unknown environmental and economic impacts of this pest.

WALNUT TWIG BEETLE (WTB): A trapping survey to detect the walnut twig beetle (*Pityophthorus juglandis*) was conducted at three sawmill locations in Grant, Sauk and Chippewa counties. Selected locations often receive black walnut logs from out of state, increasing risk of introduction of this non-native pest to Wisconsin. Nine baited multi-funnel traps were set mid-May and monitored through early September, with no beetles found in collection samples. DATCP has conducted WTB detection surveys since an exterior quarantine for thousand cankers disease went into effect in 2011.

REGULATORY:

The Forest Pest Regulatory Program works with members of the forest products industry to facilitate compliance with state and federal quarantine regulations related to the movement of certain forest products. DATCP inspectors work with individual businesses and enter into compliance agreements..

- 13 Hemlock Woolly Adelgid compliance agreements signed.
- 23 Emerald Ash Borer compliance agreements signed.
- 15 Gypsy Moth compliance agreements signed.
- 145 forest product industry individuals trained in gypsy moth identification.



Velvet Longhorn Beetle found in Wisconsin

Figure 7: VLB Detections

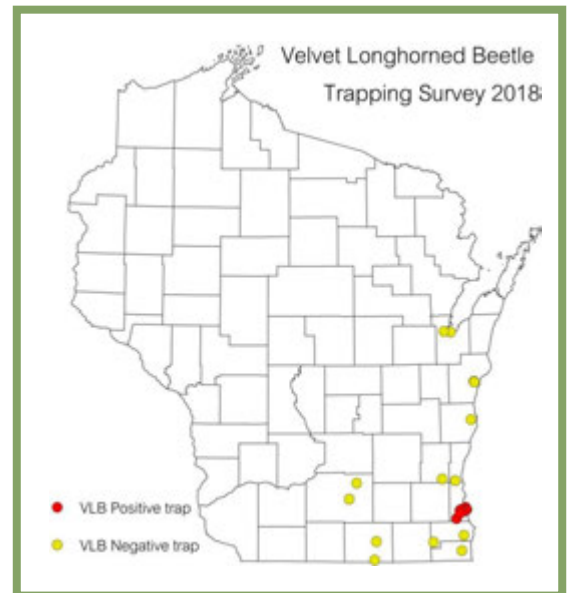
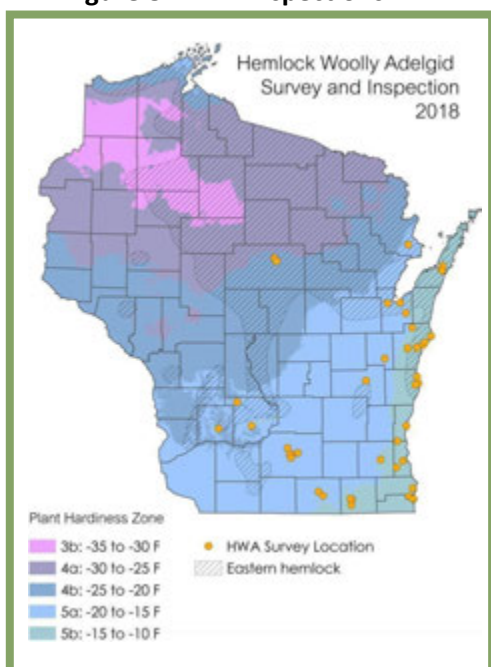


Figure 8: HWA Inspections

Top: White cottony egg sac found at the base of hemlock needles. Bottom: Hemlock woolly adelgid nymph stage prior to white woolly wax development.

HEMLOCK WOOLLY ADELGID (HWA): A visual survey to detect HWA (*Adelges tsugae*) was conducted during the winter months of 2018. Although this pest has yet to be found in the state, its expansion along the lakeshore of four Michigan counties has heightened the threat since crawlers can spread by wind, birds and forest-dwelling animals. Since import controls on hemlock nursery stock and seedlings entering WI were first established in 2003, this potential pathway of introduction was significantly reduced.

Visual surveys were conducted at arboretums, botanical gardens, nature centers, and urban forested landscapes in south central and eastern Wisconsin (see Figure 8). Locations where hemlock nursery stock was more recently planted were of most interest. In addition, surveys targeted areas of the state both within the natural range of hemlock and Plant Hardiness Zone 5a – 5b, where it is more likely HWA can survive winter temperatures. A total of 46 sites were contacted by phone in 2018, and all but 10 had hemlock present so a site visit was warranted. In addition to HWA, surveyors also looked for EHS, another exotic pest often found on hemlock and co-occurring on HWA infested hemlock in eastern states. No HWA or EHS were detected during the survey.

EXOTIC WOODBORER SURVEY: In addition to Velvet Longhorn Beetle, a detection survey targeting 10 other woodboring and bark beetle species was conducted as part of a Farm Bill funded national exotic woodborer survey (see table 4). None of the 10 species trapped are known to occur in the state, however urban industrial locations pose risk as a potential pathway of introduction due to the use of wood packing material. A total of 70 traps baited with attractant were set across a subset of those sites trapped for VLB, with 15 sites selected for trap placement at businesses specializing in metal manufacturing, machinery parts manufacturing and distribution, commercial stone and masonry suppliers, and receiving centers. Of the 643 samples collected during the May through September monitoring period, all were processed in the laboratory and none of the 10 target species were found.

Table 4: Exotic Woodborer Survey Results

Common Name	Scientific Name	No. of Traps	Pest Found
Asian longhorned beetle	<i>Anoplophora glabripennis</i>	10	No
Large pine weevil	<i>Hylobius abietis</i>	15	No
Six-toothed Ips	<i>Ips sexdentatus</i>	15	No
European spruce bark beetle	<i>Ips typographus</i>	15	No
Japanese pine sawyer	<i>Monochamus alternatus</i>	15	No
Black fir sawyer	<i>Monochamus urussovii</i>	15	No
Mediterranean pine engraver	<i>Orthotomicus erosus</i>	15	No
Spruce engraver	<i>Pityogenes chalcographus</i>	15	No
Black spruce beetle	<i>Tetropium castaneum</i>	15	No
Brown spruce longhorned beetle	<i>Tetropium fuscum</i>	15	No
Velvet longhorned beetle	<i>Trichoferus campestris</i>	25	Yes

EMERALD ASH BORER (EAB): New county detections totaled three in 2018 and included Clark, Kewaunee and St. Croix counties. EAB infested counties now include 51 of Wisconsin's 72 counties, with land holdings in these counties containing over half (56%) of the state's total ash volume. Although 80% of statewide acreage has not yet had a detectable infestation, EAB remains a fatal threat to Wisconsin's urban and forestland ash trees.

On March 30, 2018 the entire state of Wisconsin was placed under quarantine for EAB, resulting in free movement of ash wood and untreated products between counties. Since 2008, quarantines had been imposed county by county, which helped to slow the spread of EAB over the past decade. However, now that EAB has been detected in 70% of Wisconsin counties and all but two Wisconsin counties have detectable infestations or are adjacent to an infested county, a statewide quarantine was warranted.

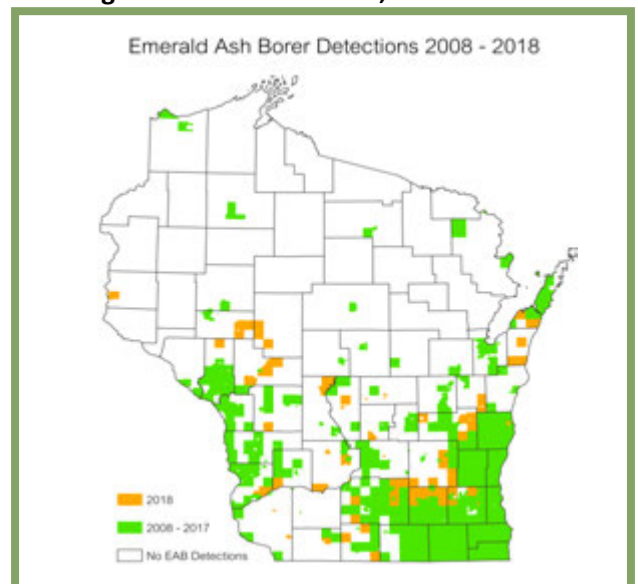
For the first time since 2008, no baited purple traps were deployed to aid in the detection of EAB. Prior year surveys focused detection efforts in those counties with no known infestation and were a collaborative effort between DATCP, the USDA Animal and Plant Health Inspection Service (APHIS), the Department of Natural Resources (DNR), county forest staff, and tribal partners. Moving forward, DATCP will continue to receive and validate reports of new infestations and share this information with Wisconsin's citizens, private businesses and governmental entities to aid in decision making concerning EAB management and readiness planning.



Table 5: EAB Yearly Detections, 2008-2018

Year	Statewide Detections	Number of County Detections	Number of County Quarantines
2008	2	2	4
2009	9	5	5
2010	2	0	0
2011	2	2	2
2012	16	4	4
2013	45	6	6
2014	52	10	16
2015	49	6	2
2016	98	5	3
2017	120	8	7
2018	82	3	ALL
Total	477	51	72

Figure 9: EAB Detections, 2008-2018





APIARY PROGRAM

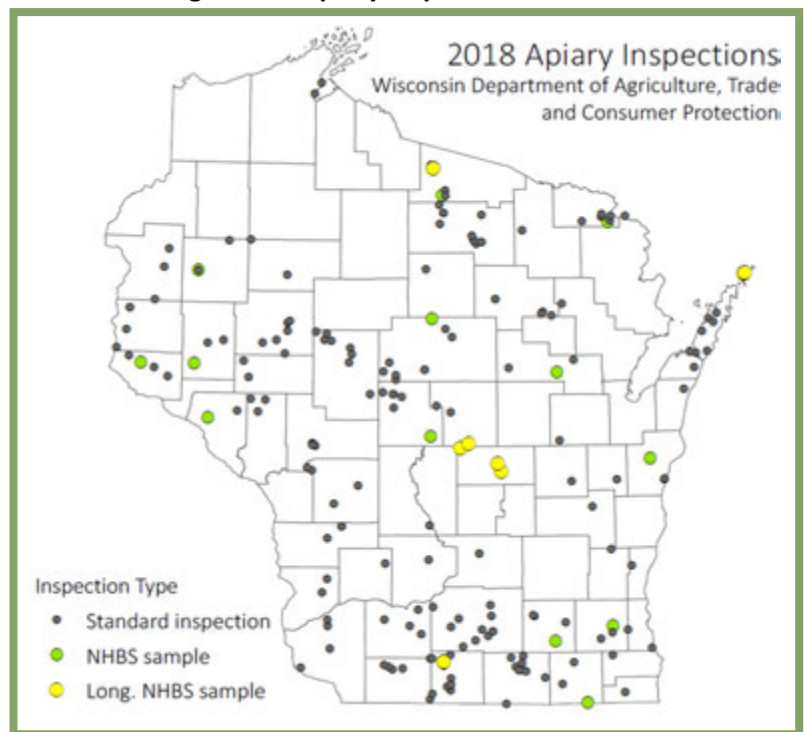
APIARY INSPECTION: Apiary inspectors visited 201 beekeepers in 2018, opening 3,342 hives for inspection. Based on these voluntary inspections, winter mortality decreased from 54% in 2016-17 to 47% in 2017-18, which is slightly higher than the 40% national average of winter loss for beekeepers during the same time period. Varroa mite was detected in 58% of hives sampled, down from 64% last season. Other pests and diseases found include American foulbrood in 0.1% of hives, chalkbrood in 1.1% of hives, European foulbrood in 0.3%, deformed wing virus in 1.2%, sacbrood in 1.4%, and small hive beetle in 1.7% of hives. Pest and disease issues were generally down this year, although frequent rain interrupted inspection schedules. Also due to persistent rain, there were more broodless periods this spring, resulting in lower mite populations. Inspectors issued 71 apiary inspection certificates for out-of-state movement of 31,240 migratory hives, primarily destined for California, Florida and Texas to be used for pollination services.

NATIONAL HONEY BEE HEALTH SURVEY (NHBS): Wisconsin continued to participate in the USDA National Honey Bee Health Survey for the eighth straight year. Live bee samples and brood comb wash samples from 24 apiaries were sent to the USDA Bee Research Lab for parasite analysis. Another 24 samples of bees in alcohol were sent to USDA Bee Research Lab for virus analysis, and 10 wax samples were submitted for pesticide analysis. The full results are still pending. To date, no *tropilaelaps*, *Nosema apis* or *Apis mellifera capensis* have been found. American and European foul brood, *Nosema ceranae*, Varroa mites, chalkbrood and various viruses—including varroa destructor virus and k-wing were found.

Table 6: Apiary Inspections 2018

Year	2014	2015	2016	2017	2018
Total hives opened	1152	1190	2208	4214	3342
Varroa mite	85%	71%	68%	64%	58%
Sm Hive Beetle	2.6%	3.1%	7.5%	10.2%	1.7%
American Foulbrood	0.7%	1.1%	1.2%	0.1%	0.1%
European Foulbrood	0.8%	3.6%	0.3%	0.2%	0.3%
Chalkbrood	2.3%	3.1%	2.8%	4.2%	1.1%
Sacbrood virus	1.3%	0.1%	0.4%	5.8%	1.4%
Deformed wing virus	1.0%	6.8%	7.3%	19.8%	1.2%

Figure 10: Apiary Inspections 2018



Immature bee being parasitized by a Varroa mite in Wisconsin

GYPSY MOTH PROGRAM

GYPSY MOTH: Statewide male gypsy moth catch totals decreased by ~29% from 2017 to 2018. In 2018, trappers reported 76,513 male moths (7.1 moths/trap), while 2017 trappers reported 108,808 male moths (9.9 moths/trap). The total number of positive traps (traps containing one or more male gypsy moths) also decreased by ~23%, from 4,263 positive traps in 2017 to 3,264 positive traps in 2018. Population declines were most noticeable in northern counties, while populations in southern Wisconsin increased moderately or remained similar to those of 2017. Burnett County emerged as an outlier from this trend, remaining a hot spot for gypsy moth activity west of the quarantine zone for a second consecutive year.

In 2018, the Slow the Spread (STS) Program treated 35 sites, totaling 76,288 acres. AI's Aerial Spraying of Ovid, MI applied all Btk and mating disruption (MD) products. Btk applications began May 22nd and ended June 5th. Foray 48B was applied to 24,612 acres at 24 sites in 14 counties. No Gypchek was applied in 2018. The Forest Service mating disruption applications occurred from June 28th–July 11th. A total of 51,676 acres across 11 sites in 6 counties were treated with MD in western Wisconsin. The mating disruption project has moved entirely to a liquid formulization treatment product, SPLAT Gypsy Moth-Organic. Post-treatment evaluations indicated treatments were highly effective; there was only one treatment failure and four treatments were evaluated as partially successful.

Climatic conditions during larval development were cool for temperature and normal for precipitation, leading to suitable conditions for gypsy moth larval diseases. *Entomophaga maimaiga* and NPV infection and mortality were noted in field populations in southern WI. Severe winter temperatures likely played a role in gypsy moth survivorship in 2018. Minimum temperatures in northern WI reached -20 to -25 °F for multiple days in late 2017/early 2018. This is supported by the reduced trap catches in the region and very limited hatch above the snow line at infested sites. Interestingly, extreme winter temperatures may be a factor again this year, with minimums in late Jan 2019 reaching -30 to -35°F throughout most of the state.

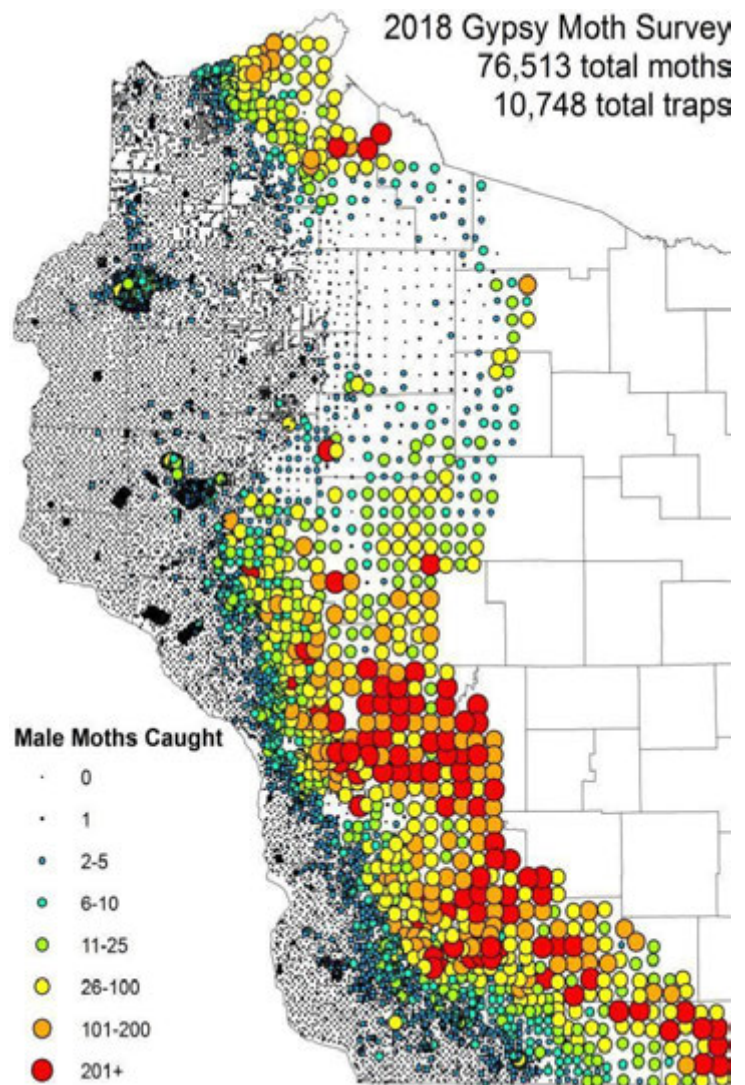


Figure 11: Gypsy Moth Detections, 2018

PEST SURVEY CORN

Figure 12: ECB Detections 2018

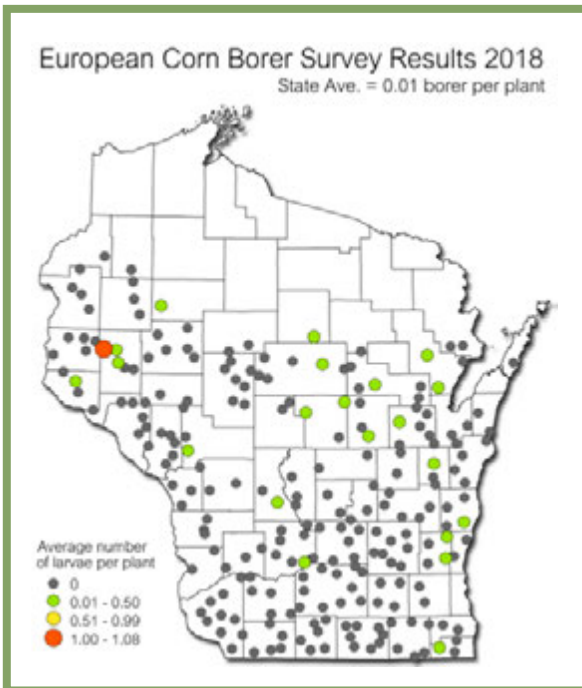
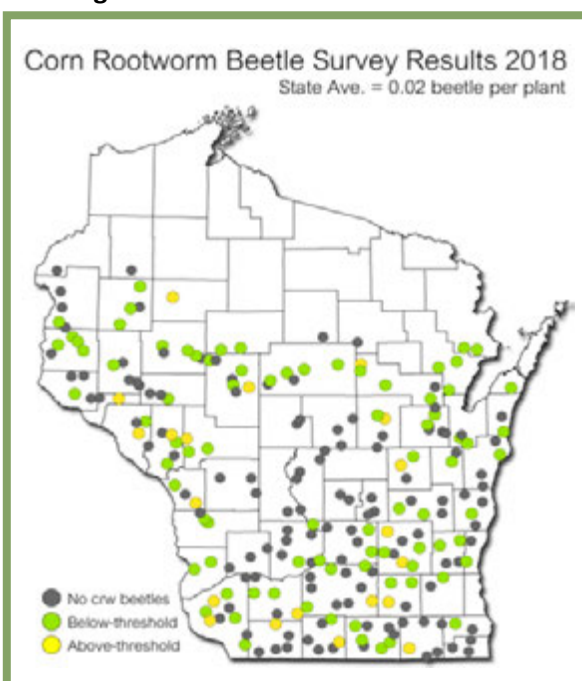


Figure 13: CRW Detections 2018



EUROPEAN CORN BORER: Larval counts in September and October were the lowest in 77 years of annual surveys. The 2018 state average European corn borer (ECB) population decreased to 0.01 borer per plant or one larva per 100 plants, falling below the previous record of 0.02 borer per plant set in 2015. Seven of the state's nine agricultural districts showed averages less than or equal to 2017 levels, while negligible increases were noted in the west-central and northeast areas. Larvae were found in only 10% of the fields, with infestation rates below 36% at all but one Dunn County site which averaged 108%. The exceptionally low ECB pressure documented by the fall survey provided reassurance to growers who opted to plant non-trait corn seed, though conventional acreage continued to require a higher level of scouting and management to address local variability in seasonal ECB abundance.

CORN EARWORM: The DATCP network of 14 pheromone traps captured a cumulative total of 7,905 moths, with the majority arriving during the six-week period from August 2-September 12. More than one-quarter of the migrants (2,269) were collected at the Beaver Dam (Dodge County) location. Three other sites in Dane, Dodge and Fond du Lac counties also reported high cumulative counts of 500 or more moths. This year's total count was nearly three times larger than that of 2017 when 2,760 moths were captured in 15 traps. Corn earworm flights ended about September 26, 2018.

CORN ROOTWORM: Beetle populations were historically low again in 2018. The state average count of 0.2 beetle per plant was equivalent to the 2017 average, while numbers in all nine crop reporting districts remained at or below 0.4 beetle per plant for the second year in a row. The only district-level increases in 2018 occurred in the west-central and northeast areas, where the averages rose from 0.2 beetle per plant in 2017 to 0.3 per plant and from 0.2 to 0.4 per plant, respectively. A minor decrease was recorded in the central district. Above-threshold counts of 0.75 or more beetles per plant were found in 21 of 229 (yellow circles) fields surveyed, low to moderate counts of 0.1-0.7 per plant were found in 81 fields (green circles), and no beetles were observed at 127 (gray circles) of the survey sites.

Again this season the northern species outnumbered the western species by a 2:1 ratio. The 2018 total beetle count was 566, with 379 being the northern variety and 187 westerns. In 2017, a total of 347 northern, 176 western, and 5 southern were counted, 528 adult rootworms in all.

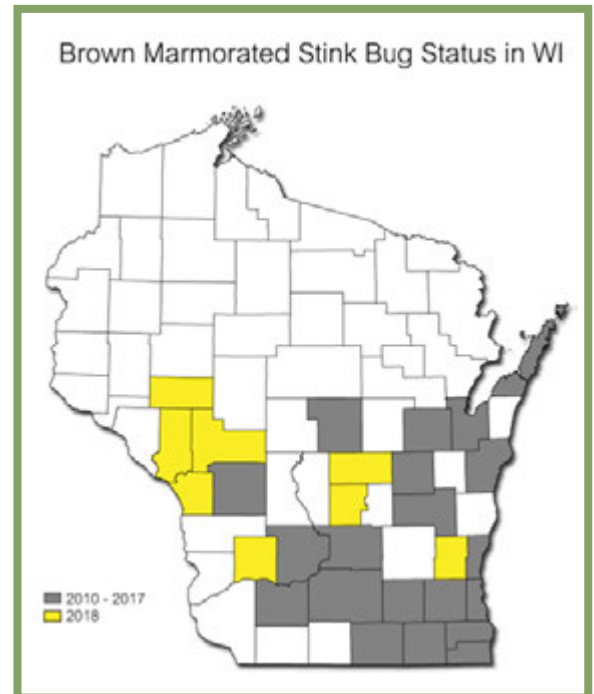
PEST SURVEY FRUIT

BROWN MARMORATED STINK BUG: Monitoring by DATCP cooperators and IPM Institute consultants in 39 orchards and 12 vineyards resulted in capture of BMSB on traps at six sites. All clear sticky panels collected fewer than 20 total specimens during the late June through October survey period. However, in Janesville, another trap type—the dual funnel trap from Great Lakes IPM—captured 258 BMSB (173 adults and 85 nymphs). Rock County is one of several counties (along with Dane, Milwaukee, Outagamie, Waukesha, and Winnebago) where concentrations are high enough that BMSB has become an urban nuisance. The majority of range expansion this year occurred in western Wisconsin, particularly in Eau Claire, Jackson, La Crosse, Marquette, Richland and Trempealeau counties. Twenty-eight of the state’s 72 counties are now known to be infested with BMSB.

SPOTTED WING DROSOPHILA: The first SWD flies of the season were captured in UW traps on June 1 in Dane County. This date compares to June 5 in 2017, and June 10 in 2016, and suggests that SWD are appearing earlier each year. Significant SWD fly captures were first reported during the week of June 17-23 at monitoring sites, and larvae were common in raspberries and other small fruits by early July.

SPOTTED LANTERNFLY: Surveys for this pest in nine Wisconsin apple orchards and 12 vineyards were negative in 2018. Spotted lanternfly has not yet been found in the state.

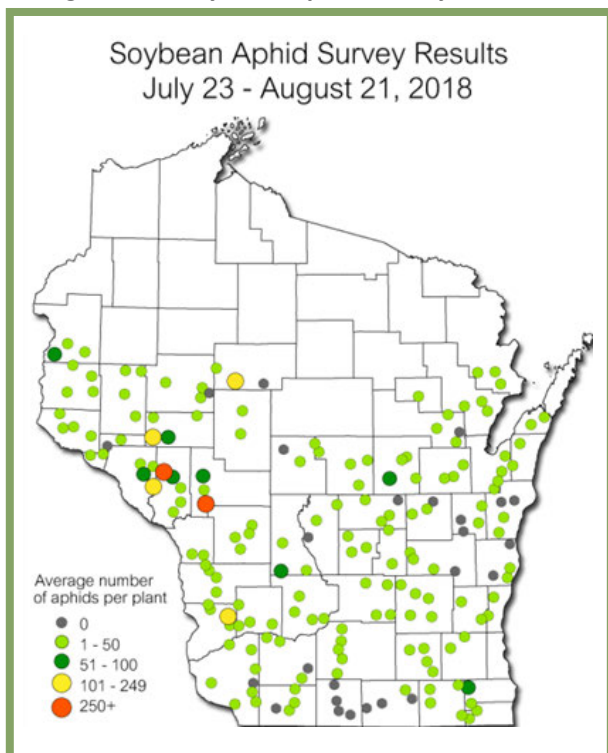
Figure 14: BMSB Detections, 2018



Brown Marmorated Stink Bug

PEST SURVEY SOYBEAN

Figure 15: Soybean Aphid Survey Results



Soybean Aphid

SOYBEAN APHID: Aphid populations reached the 250 aphid-per-plant treatment threshold in scattered fields during the first two weeks of August, but densities on a statewide scale were mostly low this season. The annual survey conducted from July 23-August 21 found a statewide average count of 14 aphids per plant. This was an increase from six aphids per plant last year and eight aphids per plant in 2016, still far below the threshold. One hundred and eighty-nine soybean fields in the R2-R6 growth stages were surveyed, with aphids counted on 40 plants per field. Only two sites, one each in Jackson and Trempealeau counties, contained above-threshold populations of 260 and 290 aphids per plant. Densities were below 100 aphids per plant in 96% of fields, and the majority of those sites (86%) had average counts of less than 25 per plant.

Results of the survey suggest that while aphid pressure was slightly higher in 2018 than in the previous two years, most sampled soybean fields did not meet treatment guidelines during the survey timeframe. In addition, no cases of pyrethroid insecticide failure were reported or confirmed in the state.

JAPANESE BEETLE: This insect was a leading pest of concern to Wisconsin soybeans again in 2018, second only to the soybean aphid. Surveys in July and August found defoliation in 72% of fields. In 2017, a banner year for Japanese beetle in Wisconsin, 87% of surveyed sites had some degree of feeding. Sweep net sampling during the August aphid survey yielded average counts ranging from 0-21 beetles per 100 sweeps in the state's nine crop districts. Areas with the highest numbers were the southeast (21 per 100 sweeps), south-central (17 per 100 sweeps) and west-central (13 per 100 sweeps) districts. The state average was 8.4 beetles per 100 sweeps. The prevalence of Japanese beetles documented signals that this invasive pest continues to pose a significant threat to the state's soybean crop.

SOYBEAN GALL MIDGE: An emerging pest of Midwestern soybeans, the soybean gall midge (SGM) was not found in Wisconsin this year. Populations were confirmed in 12 western Iowa counties, as well as in Nebraska and South Dakota. Larvae of the SGM, a member of the Hessian fly family (Cecidomyiidae), feed internally at the base of soybean stems and cause stem discoloration. Infested plants snap off near the ground and the orange or white maggots can be found feeding inside. Much remains unknown about this insect, including the exact species and whether it is a direct or a secondary soybean pest.



PLANT INDUSTRY LABORATORY

PLANT INDUSTRY BUREAU LABORATORY (PIB Lab): In 2018, the PIB lab processed 1,831 samples for plant diseases, nematodes and pest identifications. The PIB Lab houses both Plant Pathologists and Entomologists that tested 989 samples for diseases and nematodes; and examined 842 samples for pests. 1,513 ornamentals including 702 nursery and Christmas tree samples and 318 field crops, fruits & vegetables were diagnosed in 2018. Here are some highlights.

PATHWAY SURVEY OF FRUITS & VEGETABLES—PLANT DISEASE REPORT: In 2018, a team of Entomologists and Plant Pathologists from DATCP, UW-Extension and the IPM Institute collaborated on a bundled survey of community gardens, community supported agriculture farms, immigrant farms, orchards and vineyards. This Farm Bill funded survey targeted invasive, non-native diseases and pests including diseases of special regulatory or economic concern to Wisconsin. Scouts monitored 56 different sites for diseases in three major metropolitan areas: La Crosse, Madison, and Milwaukee. PIB lab staff created factsheets for scouts and cooperators to help screen for apple proliferation disease, grapevine yellows and Pierce's disease of grapes in orchards and vineyards.

From May 31 to Oct 16, 2018 bi-weekly visits to insect traps were combined with surveys for targeted diseases. Scouts submitted eighteen samples to the PIB lab for diagnosis. None of the target pathogens were detected. Table 7 below lists the targeted diseases, their primary hosts and the type of survey site.

Table 7: PIB Lab Targeted Diseases and Primary Hosts

Disease Survey Sites	Primary Host	Common Disease Name	Scientific Name
Orchard	Apples	Apple proliferation	Candidatus Phytoplasma mali 16SrX-A
Vineyard	Grapes	Australian grapevine yellows	Candidatus Phytoplasma australiense 16SrXII-B
Vineyard	Grapes	Flavescence doree	Candidatus Phytoplasma vitis 16SrV-C
Vineyard	Grapes	Boir noir, Stolbur	Candidatus Phytoplasma solani 16SrXII-A
Vineyard	Grapes	Pierce's disease	Xylella fastidiosa
CSA/Gardens	Tomato and pepper	Bacterial wilt and canker of tomato	Clavibacter michiganensis michiganensis
CSA/Gardens	Onion, garlic, bulb flowers	Stem and bulb nematode	Ditylenchus dipsaci
CSA/Gardens	Tomato, pepper, potato	Late blight of tomato/potato	Phytophthora infestans
CSA/Gardens	Corn	Java downy mildew	Peronosclerospora maydis
CSA/Gardens	Corn	Philippine downy mildew	Peronosclerospora philippinensis
CSA/Gardens	Cucurbits	Downy mildew of cucurbits	Pseudoperonospora cubensis
CSA/Gardens	Cucurbits	Cucumber green mottle mosaic (CGMMV)	Tobamovirus Cucumber green mottle mosaic virus

VIRUSES OF ORNAMENTALS: Nursery inspectors submitted 619 plant samples to PIB lab for disease diagnosis. 257 of 660 (39%) samples were suspected to be infected with a plant virus. Lab testing, including gene-based methods, screened for 11 different viruses. 168 of 257 (65%) samples tested positive for at least one plant virus. The most common plant viruses detected belong to the potyvirus group with 87 positives, 73 on Iris alone. Other hosts infected with potyviruses were Freesia, Helenium, Hosta, Horseradish, Mandevilla, Narcissus, Sedum, Sidalcea and Tradescantia. Table 8 below lists viruses and test results. Twenty-six samples tested positive for Tobacco rattle virus (TRV) and 23 for Hosta virus X (HVX). Sixteen plants showed positive test results for an Ilarvirus group. This included Alfalfa mosaic virus (AMV), detected on Ajuga “Caitlin’s Giant”, and Tobacco streak virus (TSV) on four Astilbe varieties and one rhubarb. Canna yellow mosaic badnavirus (CaYMV) was found on two Canna hybrids “Orange Chocolate” and “Cannova Yellow”. Clematis chlorotic mottle virus (CICMoV) was detected on Clematis “Hagley hybrid” and lilac leaf chlorosis (LLCV) on lilac. Tobacco mosaic virus (TMV) infected Angel Trumpet “Charles Grimaldi”. Images of plant symptoms are posted on our website at <https://datcp.wi.gov/Documents/PlantVirusSymptoms.pdf>. All lab results were reported to nursery inspectors who worked with producers and retailers to prevent virus-infected plant material from entering the retail chain.

Blueberry and cranberry plants were screened for **blueberry shock virus (BIShV)**, **blueberry scorch virus (BIScV) including Sheep Pen Hill strain (BIScV-NJ)**, as required by Michigan import requirements. Gene-based methods showed all stock to be free from these viruses.



Illarvirus on River Birch—2018 PIB lab sample

Table 8: Viruses of Ornamentals, 2018

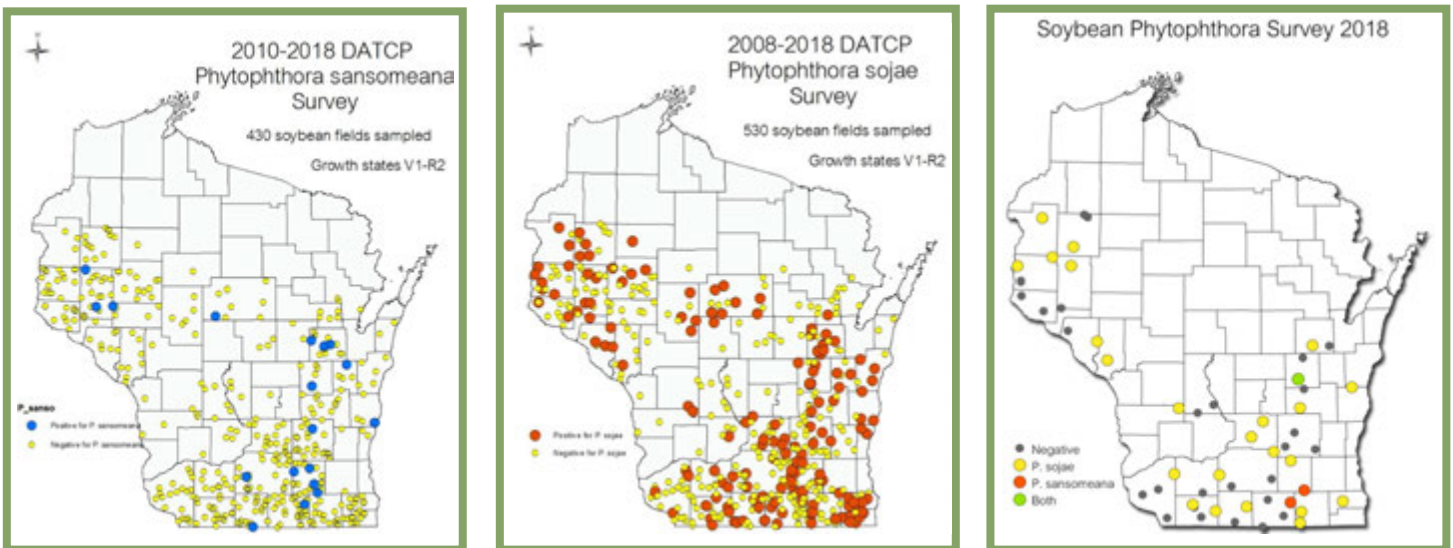
2018 Test Results Viruses of Ornamentals	Total Tests	Total Positives	Percent Positive
Arabis mosaic virus (ArMV)	6	0	None
Canna yellow mosaic virus (CaYMV)	2	2	100%
Clematis chlorotic mottle virus (CICMoV)	3	1	0.33%
Cucumber mosaic virus (CMV)	71	9	12.6%
Hosta virus X (HVX)	47	23	48.9%
Ilarvirus group	36	16	44.4%
Impatiens necrotic spot virus (INSV)	50	2	4.0%
Potygroup viruses	111	87	78.4%
Tobacco mosaic virus (TMV)	54	1	1.9%
Tobacco rattle virus (TRV)	68	26	38.2%
Tobacco ringspot virus (ToRSV)	4	0	None
Tomato spotted wilt virus (TSWV)	50	1	2.0%

SOYBEAN SEEDLING ROT ROOT: In 2018, DATCP surveyed 54 soybean fields from June 11 to July 6 for seedling root rot diseases. From each field, twenty seedlings were carefully dug up and submitted to the PIB Lab. Samples were tested for *Phytophthora sojae*, general *Phytophthora* species, and general *Pythium* species, using gene-based methods. Testing confirmed that 25 of 54 (46%) of fields were positive for *P. sojae*. This was an increase from the two previous years where in 2017, 24% of fields were found to have *P. sojae* and in 2016, 32% of fields were positive. The past decade of the survey has found *P. sojae* prevalence ranging from 13% in 2011 to 49% in 2014. *Pythium* was present in most fields (96%, 52 of 54) in 2018, the same as in 2017.

In addition, another *Phytophthora* species, *Phytophthora sansomeana*, was found in three fields. These fields were located in Jefferson, Rock and Winnebago counties. Since first finding *P. sansomeana* in Wisconsin in 2012, it has been documented in twelve counties: Calumet, Dane, Dodge, Dunn, Eau Claire, Green, Jefferson, Outagamie, Marathon, Rock, Sheboygan and Winnebago. This year both Rock and Winnebago were new additions to this list.

The increase in *Phytophthora* root rot is most likely due to excessively wet spring conditions in 2018.

Figure 16: Soybean seedling survey results for *P. sojae* and *P. sansomeana*



SOYBEAN CYST NEMATODE: *Heterodera glycines* has been found in more than 94% of Wisconsin's soybean acreage. The latest new county detections were Marathon Co. in 2013 and Langlade Co. in 2017. Figure 17 below shows all county detections since Racine Co. in 1981.



Figure 17: Soybean cyst nematode infected countries, 2018

TAR SPOT OF CORN: Wisconsin and other Midwest states experienced a major outbreak of this disease in 2018. In Wisconsin, tar spot was first detected in Green and Iowa Counties in 2016. Appearing at low levels at the end of the season, tar spot was considered of no economic significance in 2016 and 2017. In Mexico, where tar spot has previously been reported to cause economic losses, the disease is described as a complex of the tar spot-causing-fungus *Phyllachora maydis* with two other fungi, *Coniothyrium phyllachorae* and *Monographella maydis*.

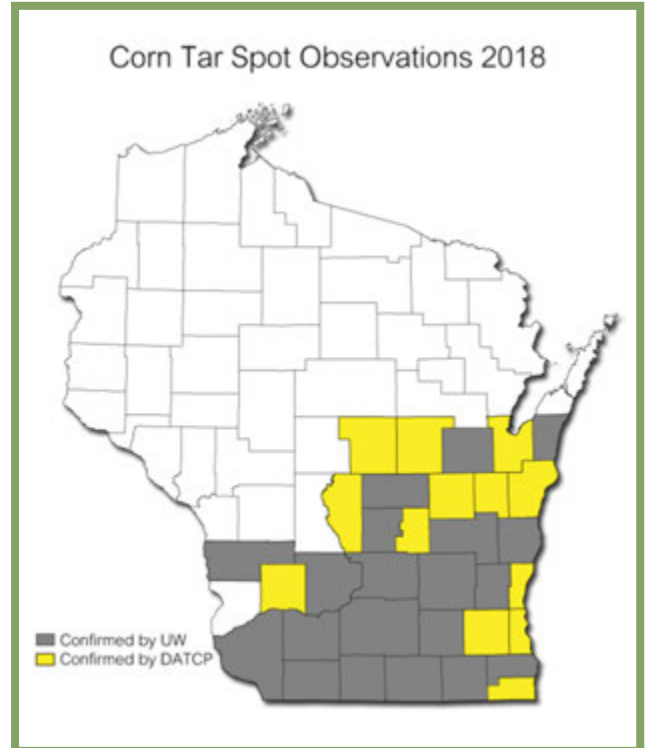
In 2018, UW Field Crops Pathology reported widespread findings in southeastern Wisconsin, warning of severe damage and early dry-down. UW and DATCP Pest Survey documented tar spot of corn in 33 counties of the southern half of the state in 2018. DATCP surveyed corn fields from Sept 25 to Oct 16, 2018 and found tar spot in 77 of 79 fields (97%). A subset of fields was sampled and 36 symptomatic corn leaves were submitted to PIB lab for testing.

Examination at PIB lab confirmed the tar spot causing fungus *Phyllachora maydis* and showed that most corn leaves were also infected with a variety of other common corn leaf diseases, notably grey leaf spot (100%) and anthracnose (98%). The next most-frequently found fungal leaf diseases were northern corn leaf blight (44%) and northern corn leaf spot (31%).

Tar spot is named for the black shiny fruiting structures of the *Phyllachora* fungus dotting infected corn leaves. Infected leaves often display fisheye-like spots formed by tan colored halos surrounding the black spots. We observed a second fungus sporulating out of these fisheye lesions. Gene-based testing identified the second fungus as a *Coniothyrium* species with a *Paraphaeosphaeria* sp. sexual reproductive state. The other fungi reported to be associated with the disease in Mexico, *Monographella maydis*, was not observed in Wisconsin.

Seed corn fields all tested negative for a new bacterial disease called **bacterial leaf streak** that is caused by the bacterium *Xanthomonas vasicola* pv. *vasculorum*. This disease was found for the first time in Wisconsin in Pierce Co. in September of 2018 by UW-Madison Plant Pathology. This find adds Wisconsin to the list of Midwest states where the disease has been confirmed. USDA confirmed first detections in the US in 2016 in CO, IL, IA, KS, MN, NE, OK, SD and TX.

Figure 18: Corn Tar Spot Detections, 2018



Tar Spot of Corn and Fisheye
2018 PIB Lab Sample

POTATO ROT NEMATODE: There are 3048.95 total acres with a history of Potato Rot Nematode, 95% of the acres are located in Langlade County. Priority fields are inspected which include new fields going into seed production for the first time and previously infested fields with a current crop of potatoes. Fields are released from quarantine after two successive potato crops that show no evidence of Potato Rot Nematode. Fumigation has been proven to be an effective control of the nematode, and so fields that have been fumigated followed by two successive crops of potatoes with no evidence of Potato Rot Nematode, are released for certified seed potatoes. There has never been a report of an interception in state or out of state of seed potatoes or commercially grown potatoes with evidence of Potato Rot Nematode. Fields going into seed potato production for the first time are high priority for inspection of Potato Rot Nematode.

INSPECTION RESULTS FOR 2018: Fifteen potato fields, totaling 565.8 acres, were inspected for Potato Rot Nematode in 2017. Fourteen fields were new to seed potato production and found to have no evidence of Potato Rot Nematode. One field with a prior history, was found negative and released to certified seed after fumigation and the second successive potato crop was grown on the field.

Table 9: Potato Rot Nematode Fields and Acres by County and Current Status

County	Current Status	Sum Of Acres	Count Of Field
Forest	Released not used for potato	15	1
Kenosha	Released not used for potato	1	1
Langlade	Infested	397.3	18
Langlade	Released not used for potato	197.77	9
Langlade	Released/certified seed	1742.44	51
Langlade	Released/table stock	538.04	23
Lincoln	Released/certified seed	37	1
Manitowoc	Released/certified seed	9.3	1
Marathon	Infested	8.4	1
Marathon	Released/certified seed	64.5	2
Portage	Released/table stock	38.2	1

Potato Rot
Nematode
(*Ditylenchus
destructor*)



INDUSTRIAL HEMP

The Wisconsin Industrial Hemp Research Pilot Program began operations in 2018. Applicants who passed the background check and paid the required fees were allowed to grow and process hemp during the 2018 growing season. Fiber, grain, seed and CBD end uses were allowed. Plants were tested at the department's regulatory lab for the total THC content (total THC = delta-9 THC + (THCA*0.877)). A Fit for Commerce Certificate was issued for each sample that passed the THC test. Varieties that failed the test were required to be destroyed.

A total of 245 growers and 99 processors became licensed. A subset of 185 growers and 82 processors registered to grow and process hemp in 2018, and of the growers, 135 planted a crop. The DATCP staff collected 295 samples statewide for THC tests. A total of 274 samples passed with a THC percentage of .3 or less. Twenty-one samples failed. All of the samples of the variety "C4" failed, and it is prohibited from being grown in Wisconsin in 2019.

So far for 2019, the DATCP has received 1,468 grower applications, and 718 processor applications for a total of 2,186 hemp license applications. It is too soon to know how many registrations there are and how many will actually grow and process. However, it is clear that the interest in this new industry is quite high.

135 Wisconsin farmers grew
industrial hemp in 2018

1,468 farmers have applied to grow
industrial hemp in 2019



99 people applied for a processors
license in 2018

718 people applied for a
processors license in 2019

FIREWOOD CERTIFICATION PROGRAM

The Firewood Certification Program certifies dealers that treat their firewood to reduce the risk of spreading firewood borne pests. Certified firewood is either heat-treated or seasoned and can legally be moved across quarantine lines and to state parks and other state-owned properties.

- **30 dealers certified in 2018**
- 84 dealers certified since the program's inception

The firewood dealer certification program is voluntary. You can sell firewood in Wisconsin without being certified. If you choose to become certified, you must complete an application form and have your facilities and processes inspected by DATCP.

All packaged firewood sold in Wisconsin must be labeled, regardless of whether it is certified pest-free. However, certified wood also must bear the DATCP-certified label.

Treatment methods to kill pests:

- Heat firewood to an internal temperature of 140 degrees F. or higher for at least 60 minutes, or
- Store firewood on your premises at least 2 years before selling or distributing it in Wisconsin, or
- Treat firewood using a method approved by DATCP

