

# 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

After an unusually mild winter, the growing season of 2012 began on a promising note. Record-setting warmth in March allowed significant early planting and spring tillage but also resulted in the budding and blooming of trees and shrubs 2-4 weeks ahead of schedule, which proved disastrous for fruit growers when a series of freezes occurred in April. Corn planting advanced at the fastest pace on record in May, while periodic showers and above-normal temperatures maintained favorable growing conditions through early June. By July, following several weeks of extreme heat and insufficient rain, crop prospects plummeted and the effects of an intensifying drought were evident across the state. Sporadic precipitation and cooler weather in August offered limited relief, but the dryness persisted into October. Analysts estimate that the worst Wisconsin drought since 1988 has already cost \$45 million dollars in lost crops although the full extent of losses for the crop year will not be quantifiable for several more months.

## PEST HIGHLIGHTS

**VARIEGATED CUTWORM:** Migrants arrived in unprecedented numbers in early May and larvae became prevalent in field crops about four weeks later. Considerable damage to alfalfa, corn and soybeans was reported from

all areas of the state, with the most severe infestations occurring in Fond du Lac, Green Lake, Marquette and Sauk counties. Populations of this sporadic migratory pest were the highest in many years.

**SPOTTED WING DROSOPHILA:** Several new county records were established in August and September in Bayfield, Brown, Door, Fond du Lac, Marinette, Monroe, Pierce, Vernon, Winnebago and Wood counties, following the detection of larvae and adult specimens in raspberry and blackberry plantings. Spotted wing drosophila has been collected in 13 Wisconsin counties from Dane to Bayfield since 2010, suggesting that this invasive Southeast Asian vinegar fly is present statewide.

**EUROPEAN CORN BORER:** Larval surveys in the fall of 2012 found the lowest population in 71 years, 0.03 borer per plant. The previous lowest state average was 0.05 borer per plant in 1998. Only 19% of the 229 fields surveyed showed evidence of larval infestation while the other 81% had no detectable population. The historically low number of corn borers observed during this year's survey is indicative of the increased prevalence of Bt corn, which now comprises 63% or more of the state's corn acreage.

**TWO-SPOTTED SPIDER MITE:** Drought conditions contributed to severe outbreaks of this arthropod in 2012. Infestations were the most widespread in at least eight years

and informal estimates indicate that about one-quarter of the state's soybean fields were treated one or more times for mite control. Continued monitoring of soybeans and other crops was necessary from early July through the third week of August.

**SOYBEAN APHID:** Extreme heat and extensive chemical treatment of fields for two-spotted spider mites regulated aphid population growth this year. Colonization of soybeans began by June 4 but economic populations failed to materialize in July and August. Densities statewide were the lowest since the first detection of soybean aphid in Wisconsin just over a decade ago and insecticidal control was generally unwarranted.

#### FIRST REPORT OF PHYTOPHTHORA SANSOMEANA:

During an early-season soybean survey, the root rot disease, *Phytophthora sansomeana*, was found infecting soybean roots in three fields in Jefferson, Marathon and Sheboygan counties. *Phytophthora sansomeana* is a newly described species that has been reported on corn in Ohio, Douglas fir in Oregon, soybean in Indiana, and weeds such as wild carrot, white clover and white cockle in New York. In 2011, it was isolated from Fraser firs grown in Wisconsin Christmas tree farms. To our knowledge, this is the first report of root rot caused by *P. sansomeana* on soybean in Wisconsin. Its potential impact on soybean production remains to be determined.

## FORAGES

**ALFALFA WEEVIL:** Development was accelerated by historic heat in March and the first larvae were collected from Dane County alfalfa on April 10, exactly 36 days earlier than in 2011 and well ahead of normal. Counts increased in April to reach peak levels during the first three weeks of May. Pupation began at advanced sites by May 24. Surveys showed considerable regional variation in weevil pressure, with the highest counts and most severe defoliation observed in south-central and southwestern Wisconsin alfalfa fields. An early and timely alfalfa harvest reduced larval populations and prevented significant damage from occurring. Defoliation subsided by early to mid-June as the remaining larvae entered the non-feeding pupal stage.

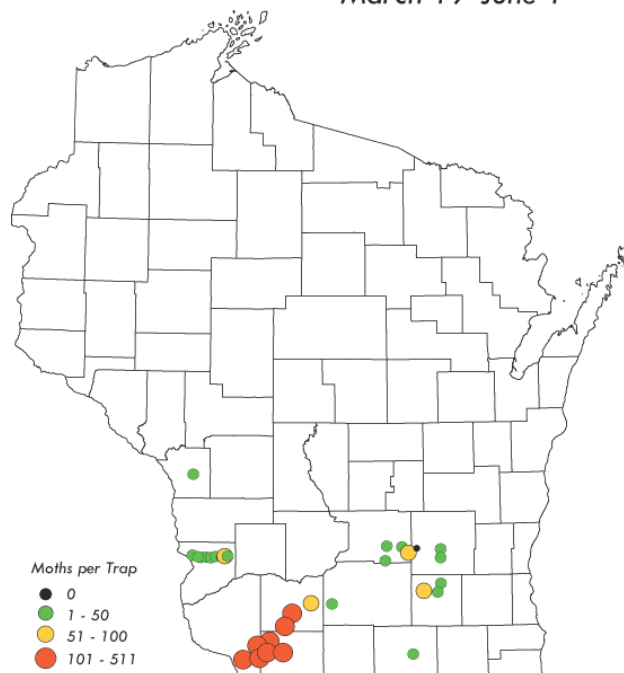
**POTATO LEAFHOPPER:** The earliest migrants arrived with southerly winds in March and were swept from Rock County alfalfa by mid-April. Successive migration events

directed large numbers of leafhoppers into the state in April and May, with the first nymphs appearing in alfalfa as early as May 2. Populations escalated markedly by mid-June and controls continued until the drought halted alfalfa growth in late July. In contrast to the previous two years, leafhopper counts were very high this season and treatment was required for many fields in June and July.

## CORN

**BLACK CUTWORM:** Migrants arrived in remarkably high numbers this year. The network of 31 pheromone traps distributed in southern Wisconsin registered a cumulative total of 2,601 moths from March 19-June 1, with a peak occurring from May 1-16. Localized infestations developed in corn by mid-May in Columbia, Dane, Rock, Sauk and Walworth counties as a result of the large migration and favorable field conditions. Damage to late-planted corn was also reported from Manitowoc and Sheboygan counties in early June. Infestation rates ranged from 3% cut plants to as high as 22% in exceptional fields. Summarized in the map below are the spring 2012 moth counts.

2012 Black Cutworm Trap Counts  
March 19-June 1



Wisconsin Department of Agriculture, Trade and Consumer Protection

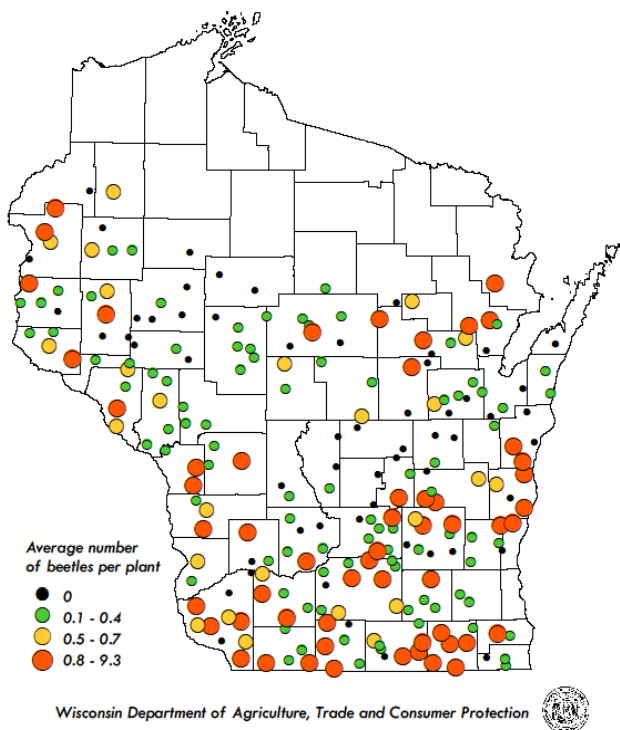


**CORN ROOTWORM:** The annual survey conducted in August found a minor decrease in the state average number of beetles per plant. Population reductions were

charted in five of the nine crop reporting districts, while increases occurred in the northern and southeastern areas. The state average of 0.6 beetle per plant compares to 0.7 last season and a 10-year average of 0.9 per plant. District counts were as follows: northwest 0.5, north-central 0.3, northeast 0.6, west-central 0.4, central 0.5, east-central 0.4, southwest 0.8, south-central 0.9, and southeast 0.9. Beetle counts in all three northern districts increased markedly from very low 2011 levels, but remained below the economic threshold of 0.75 beetle per plant. Economic populations (represented by orange circles in the map) were noted in 25% of the 229 fields surveyed.

Results of the survey indicate a high potential for larval root injury to non-Bt, continuous corn in southern Wisconsin next season and a low to moderate risk elsewhere. Corn producers in the south are advised to consider crop rotation, planting a Bt-rootworm hybrid or another form of rootworm management in 2013.

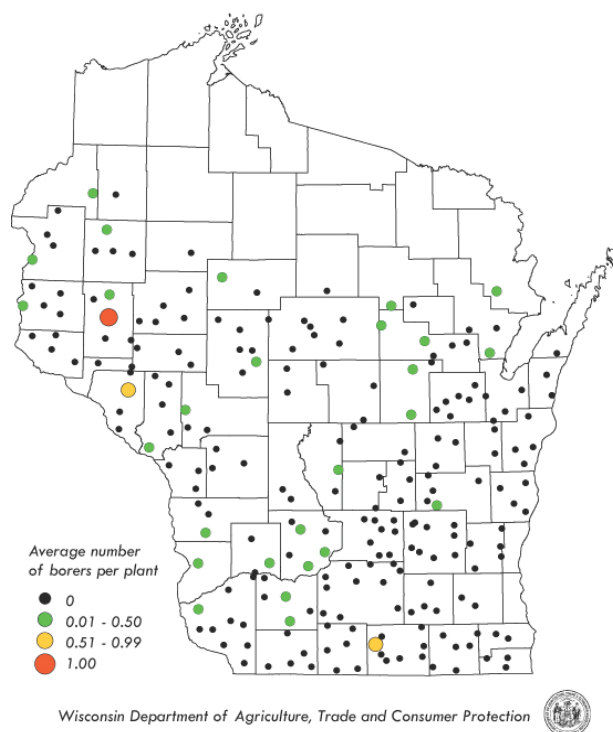
### 2012 Corn Rootworm Beetle Survey Results



districts, the exception being the southwest where the average remained unchanged at 0.03 borer per plant (see table on Page 144). The highest district average of only 0.09 borer per plant was noted in the west-central counties.

Research has demonstrated that the historically low European corn borer populations documented in Wisconsin and the Midwest during the last several years are directly associated with increasing, widespread Bt corn use. This year's already low population was likely further reduced by the summer drought.

### 2012 European Corn Borer Survey Results



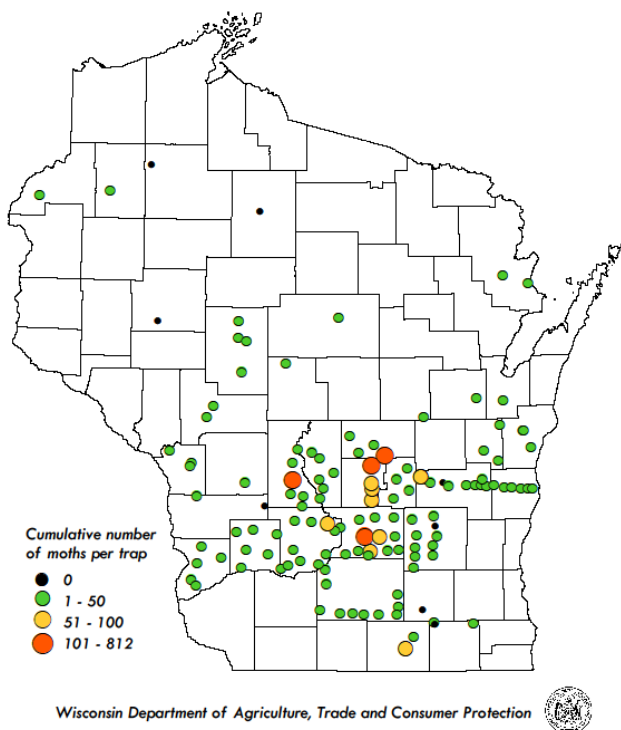
**CORN EARWORM:** The primary flight began by June 27 and continued through mid-September. Moth collections fluctuated in July and August and peaked from August 24-September 5, with weekly counts ranging from 809-2,545 moths per trap at the Fond du Lac County monitoring locations. The twelve-week migration yielded a cumulative total of 10,656 moths at 15 sites, which is a 57% increase over the 4,571 moths at 15 sites in 2011. Late-season flights were much larger than last year, although most of the moths arrived after sweet corn was well past the critical silking stage.

**WESTERN BEAN CUTWORM:** According to the 2012 trapping program results, the moth flight peaked 2-3

**EUROPEAN CORN BORER:** Larval populations declined to the lowest level in the history of Wisconsin European corn borer surveys. The seventy-first annual fall abundance survey in October found a state average of only 0.03 borer per plant, the lowest since 1942. Populations decreased from 2011 in eight of the nine crop reporting

weeks earlier and was slightly smaller than that of 2011. The average number of moths per trap was 25, a minor decrease from 28 per trap last year. The 2012 state count of 3,290 moths compares to 4,895 moths in 2011, 10,807 moths in 2010 and 4,928 moths in 2009. Infestations resulting from the flight were minimal again this season. Most larvae were fully developed and had entered the pre-pupal overwintering stage by mid-August.

### 2012 Western Bean Cutworm Trap Counts



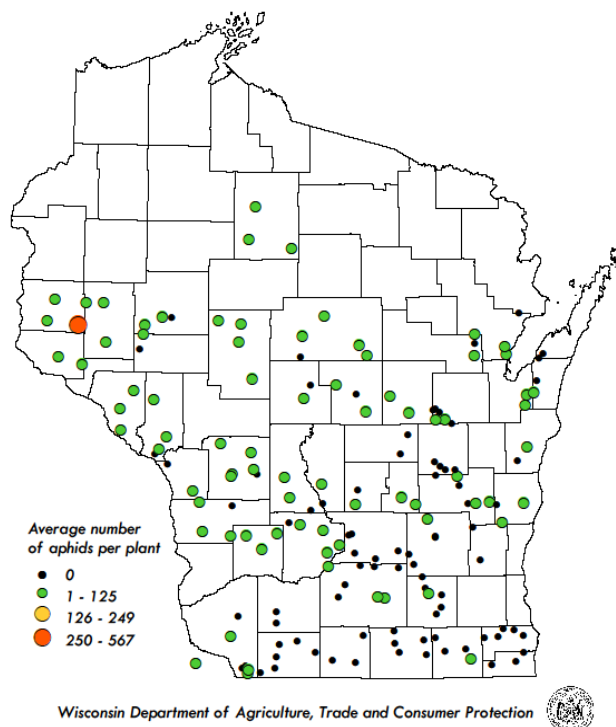
## SOYBEANS

**TWO-SPOTTED SPIDER MITE:** Prolonged extreme heat and rainfall shortages contributed to widespread spider mite problems this season. Numerous fields showing severely bronzed, stippled leaves, and in extreme cases, leaf drop, were noted in all parts of the state in July and August. The problem was most pervasive in southern and central Wisconsin, areas most impacted by this summer's drought. A large percentage of soybean acres required one or more treatments for mite control before infestations diminished in late August due to chemical intervention and intermittent rainy weather. This pest was the leading arthropod threat to Wisconsin soybean production in 2012.

**SOYBEAN APHID:** The twelfth annual survey documented the lowest densities in the history of soybean aphid

in Wisconsin. Examination of 164 soybean fields once in July and again in August found an exceptionally low state average of only three aphids per plant during the first half of the survey and a count of seven per plant in August. The previous lowest state average was 11 aphids per plant in 2004. An economic population of 568 aphids per plant was found at one St. Croix County site, while all other fields surveyed contained fewer than 58 per plant. Probable explanations for the scarcity of aphids this year include intense heat and extensive chemical treatment of fields for two-spotted spider mites, which also reduced aphid numbers.

### Soybean Aphid Survey Results August 2012

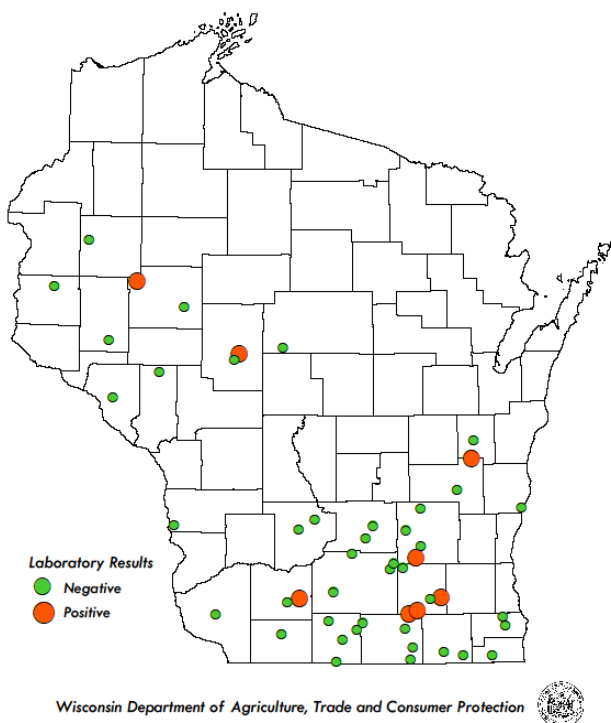


**NEW SOYBEAN VIRUS:** The UW-Madison and DATCP Plant Industry Lab confirmed in October the first detection in Wisconsin of soybean vein necrosis-associated virus (SVNaV), a tospovirus potentially transmitted by soybean thrips. The virus was isolated from soybean leaf samples collected in September. Symptoms include yellowing and browning of the leaf veins and leaves. SVNaV was first reported from Tennessee in 2008 and subsequently has been detected in Arkansas, Kentucky, Missouri, Wisconsin and Ontario, Canada. Additional research is needed to determine if SVNaV is a yield-reducing threat to the state's soybean industry.

**PHYTOPHTHORA ROOT ROT:** DATCP plant pathologists surveyed soybean fields for seedling root rot diseases

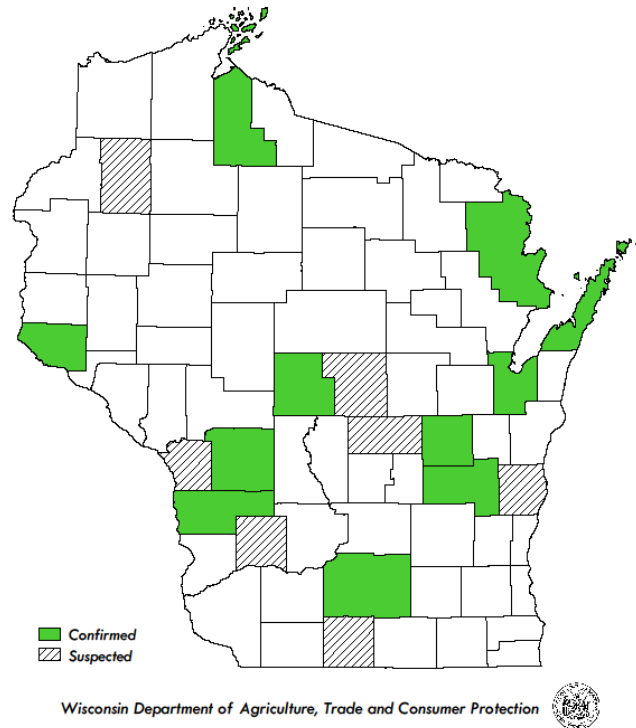
from May 29-July 2. Of the 49 root samples collected, eight tested positive for *Phytophthora sojae* (16%), a common cause of soybean root and stem rot. A second, newly described *Phytophthora* species was identified from three samples (see Looking Ahead section). All root tissues also tested positive for *Pythium*. The 2012 *P. sojae* incidence rate of 16% compares to 4% last year, 27% in 2010 and 18% in 2009, and is low relative to the rate in 2010 when wet spring weather favored root rot development.

### 2012 *Phytophthora sojae* Survey Results



plantings. The abundance of SWD this season was likely influenced by spring weather patterns that carried large numbers of flies into the state.

### 2012 Spotted Wing *Drosophila* Infestations



**CODLING MOTH:** Moths began appearing in traps from April 18-May 2. Low nightly temperatures suppressed flights shortly afterward, making it difficult for growers to determine the biofix date and schedule subsequent controls. The spring biofix was set from May 3-17 at most southern and central Wisconsin sites and a distinct “B” peak was noted around mid-June. Summer moths emerged in early July and treatments were applied during the last two weeks of the month. At most orchard locations, the second flight was smaller but lengthier than the first and extended until late August. A partial third flight was noted at a few sites in early September.

**PLUM CURCULIO:** The spring migration of beetles into orchards began by mid-April and the first oviposition scars were observed before the end of the month. Beetle activity intensified from May 4-17. Consecutive frosts and freezes in April significantly reduced fruit set, forcing the beetles to migrate farther into the interiors of orchards in search of suitable oviposition sites, which impacted control strategies that normally target perimeter trees. The migration period ended by May 24 across southern Wisconsin.

## FRUITS

**SPOTTED WING DROSOPHILA:** This newly introduced, invasive pest of Asian origin emerged in record numbers this fall. Infestations were confirmed in 11 counties and suspected in another seven, ranging from Dane County in the south to Bayfield in the far north. The current known distribution in Wisconsin includes the counties of Bayfield, Brown, Crawford, Dane, Door, Fond du Lac, Marinette, Monroe, Pierce, Racine, Vernon, Winnebago and Wood, for a total of 13 confirmed counties since SWD was first identified in the state in 2010. In the years 2010 and 2011, the detections were the result of deploying vinegar traps in orchards. By contrast, nearly all of the new cases in 2012 were reported by fruit growers who observed larvae in their blackberry and raspberry

**APPLE MAGGOT:** The first flies of the season appeared from June 7-13, approximately three weeks earlier than in 2011. Dry soils inhibited fly emergence during the rest of the month and trap counts remained very low through mid-July. Emergence resumed after a few scattered light rains and peaked from late July through mid-August, although counts were not particularly high. The delay led to a flush of adults at some sites in late August but significant late-season injury to apples was not reported. Many growers applied their last spray of the season by the third week of August with the expectation of reduced fly activity by early September.



Rhagoletis sp.

magikcanoe.com

**FROST/FREEZE DAMAGE:** Abnormally warm weather in March, followed by several frost events in April and early May decimated the state's apple crop in 2012. An informal survey of the 32 growers included in the DATCP apple pest monitoring program estimated losses ranging from 40-90%, with an average of 75%. In addition to frost damage, summer hail storms and drought further ravaged the apple harvest, which was the smallest in recent memory. As a result, apple prices increased to \$1.50-\$3.50 per pound this fall depending on the variety, many pick-your-own operations were suspended and the most desirable varieties such as 'Honeycrisp' were scarce.

**BROWN MARMORATED STINK BUG:** Established populations of the invasive brown marmorated stink bug (BMSB) are now suspected in Dane and Jefferson counties. A single nymph was collected on October 19 from the siding of a West Madison home and an adult specimen was found "at lights" in Madison on July 14. Another adult was collected from a car windshield in Jefferson County on September 28. These finds, in combination with earlier detections at two Middleton and Fort Atkinson

residences last spring, strongly suggest that the invasive bug is established at low levels in south-central Wisconsin. The BMSB has been found indoors or in association with shipping materials on at least 10 occasions since 2010, but to date has not been detected in any agricultural setting in Wisconsin.

## VEGETABLES

**VARIEGATED CUTWORM:** A major influx of migrants arrived in early May and began depositing eggs on the windows, eaves and siding of homes in northern Wisconsin. Alfalfa, corn, potatoes and soybeans began to develop larval infestations during the first week of June. Damage intensified from June 14-21, with reports of "uncountable" numbers of larvae appearing in soybeans near Ripon in Fond du Lac County and several Sauk County fields that had been "chewed down to the stems". Areas of highest concentration were in the east-central and central districts, including Fond du Lac, Green Lake and Marquette counties. Economic infestations were also noted in Adams, Barron, Clark, Columbia, Dane, Dodge, Grant, Manitowoc, Marathon, Rusk, Sauk, Waupaca, Waushara and Winnebago counties. Chemical treatment and pupation resolved much of the problem by early July.



Variegated cutworm larvae in soybeans

Mike Weiss Syngenta

**LATE BLIGHT:** Potato fields infected with late blight were confirmed in Adams, Barron, Marathon, Oneida, Portage and Waushara counties this season. The earliest infections originated by July 31 from aerially dispersed spores and a large portion of the state remained at risk for the disease throughout August. Tomatoes infected with late blight were reported from the counties listed above, as well as Eau Claire, Rusk, Sauk and Sheboygan. Monitor-

ing and treatment of susceptible tomato and potato crops continued through final harvest in September.

**CITRON BUG:** A new state record was established in Wood County on July 17 when a single adult specimen was collected from squash in a Wisconsin Rapids home garden. This leaf-footed bug is a pest of citrus fruits in Florida that causes premature color break and fruit drop. Its feeding injury also provides access for fungal diseases and insects. The recent detection is not expected to have economic implications for Wisconsin growers since winter survival is unlikely and its preferred host is citrus.



Citrion bug

gailhampshire flickr.com

## WEEDS

**INVASIVE WEEDS:** A large-scale weed survey was conducted in 2012 at 598 locations. Presence/absence data was collected for three important invasive species: black swallow-wort, common tansy and spotted knapweed. The target weeds were selected based on the need for more comprehensive baseline distribution records to inform future biological control efforts.

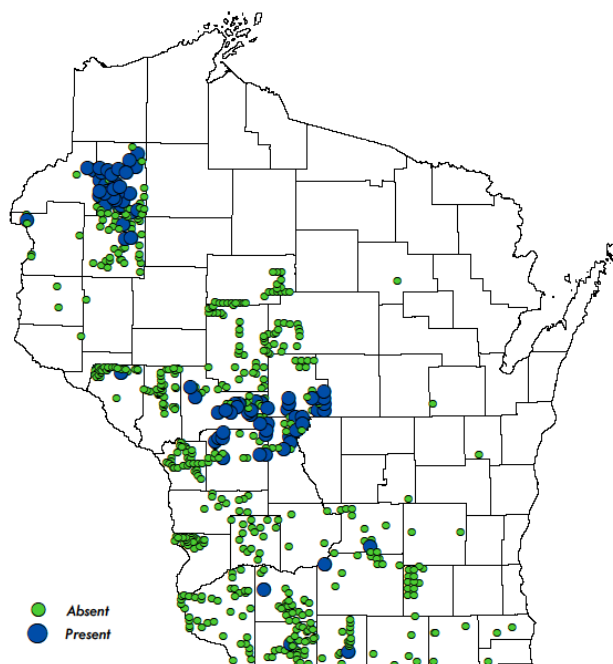
Spotted knapweed was the most common of the three species, found at 12% of surveyed sites, while common tansy was noted at 10% of sites. Black swallow-wort was not observed at any of the 598 sites.

Besides showing presence or absence, the survey also revealed pronounced regional variation in weed pressure. Most spotted knapweed, for example, was found in the central and northwestern districts where an average of 46% and 26% of sites were infested, respectively. Common tansy was documented most often in the north-

central (33%) and northwest (29%) areas of the state.

Results of the survey indicate pressure from both spotted knapweed and tansy is highest in central and northern Wisconsin and this is where future introductions of biological agents should be concentrated.

### 2012 Spotted Knapweed Survey Results



Wisconsin Department of Agriculture, Trade and Consumer Protection



## NURSERY & FOREST

**REJECTED NURSERY STOCK:** Ornamental plants and trees infested with regulated insects or diseases or that fail to meet pest cleanliness, labeling and quality standards are commonly found during routine nursery inspections. Such plants cannot be offered for sale in Wisconsin. Included in this category in 2012 were cherry trees with black knot, assorted herbaceous perennials with viruses, coneflower with aster yellows, speedwell with foliar nematodes, and non-viable stock. In addition, a variety of trees and shrubs were rejected due to scale insect infestation and wood-boring insect damage.

Also rejected this year were plants listed in the NR 40 Invasive Species Rule, such as autumn olive, Brazilian waterweed, blue lyme grass, curlyleaf pondweed, dame's rocket, glossy buckthorn, Japanese and Tartarian honeysuckle, purple loosestrife, red stemmed parrot feather, yellow floating heart and variegated porcelain berry vine.

**PHYTOPHTHORA ROOT ROTS OF CHRISTMAS TREES:**

As of late October, 49 diseased Christmas tree samples have been received by the Plant Industry Lab for diagnosis. The samples were collected from Christmas tree fields by DATCP inspectors as part of a multiyear survey for new Phytophthora root rots. Thus far, four different Phytophthora species have been identified: *Phytophthora cactorum*, *P. citricola*, *P. europaea* and *P. sansomeana*. The latter two species are new to science and were first identified in Wisconsin on Fraser fir in 2011. In addition to Phytophthora, Armillaria root rot was also a cause of tree dieback in some of the fields.



Christmas trees with root rot symptoms

Sara Ott DATCP

**JAPANESE BEETLE:** After many successive years of high trap counts, the Japanese beetle trapping program was revised in 2012 and efforts were concentrated in nurseries with low densities of 20 or fewer beetles per trap (based on three years of trap data). This year's survey included 99 traps and yielded 16,292 beetles, or 165 per trap. High counts of 200 or more beetles per trap were registered in Dodge, Jefferson, Kenosha, Manitowoc, Monroe, Ozaukee and Waukesha counties, moderate counts of 50-199 per trap were found in Dane, Jackson, Rock and Washington counties, and 13 other counties averaged fewer than 50 per trap. The survey average of 165 beetles per trap represents a 30% decrease from 2011 when the average was 236 per trap and suggests Japanese beetle populations were generally lower this season.

**EUROPEAN PINE SHOOT MOTH:** State nursery inspectors carried out a European pine shoot moth (EPSM) trapping survey for the first time this season, targeting nursery stock and Christmas tree growers who ship pines to California, Hawaii and Montana where external quar-

antines are enforced against EPSM. Approximately 32 moths were captured at two sites in Jackson and Rock counties. Surveys in Adams, Clark, Columbia, Marquette, Racine and Shawano counties were negative.

**VIRUS SURVEY OF ORNAMENTALS:** The Plant Industry Laboratory conducted a survey for virus diseases of ornamentals last spring and found 47 of 110 (43%) samples collected to be infected with one or more viruses. The most common were tobacco rattle virus on bleeding heart and barrenwort, cucumber mosaic virus on a variety of hosts, and hosta virus X on hosta. A complete listing of the plants tested and viruses found is included in the August 2 issue of the Bulletin.

**BOXWOOD BLIGHT:** This new disease of boxwoods, caused by the fungal pathogen, *Cylindrocladium pseudonaviculatum*, was not diagnosed from any boxwood sample submitted to the Plant Industry Lab for testing this season. Some samples showing tip dieback were found to have Phoma blight, Volutella blight or winter injury. Symptoms of boxwood blight include brownish leaf spots, distinctive black stem lesions, rapid defoliation and severe dieback. This fungal disease has not been confirmed in Wisconsin to date.



Boxwood blight leaf lesions

Connecticut Ag Research Station

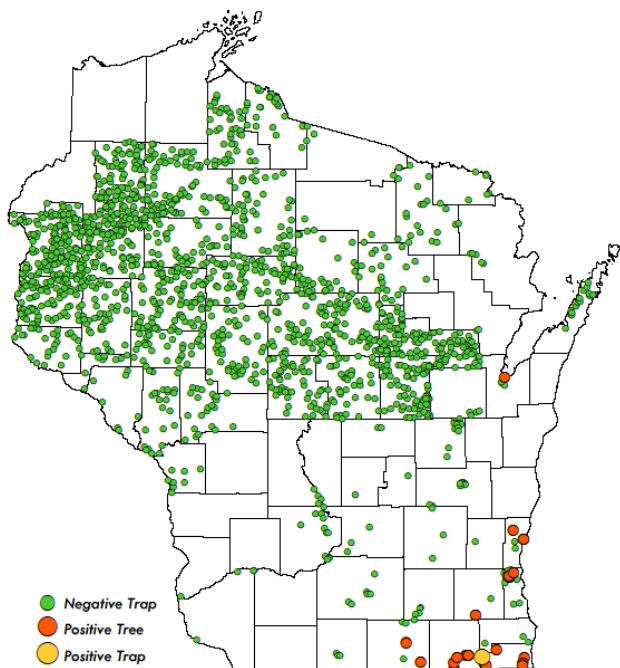
**EMERALD ASH BORER:** The 2012 detection survey conducted by DATCP included 1,639 traps and resulted in the capture of 11 beetles on one trap in Kenosha County. Another two beetles were captured on a trap set by the DNR at Perrot State Park in Trempealeau County. All other traps were negative, although several infested trees were discovered in June in Brown, Rock, Walworth and Waukesha counties. Consequently, Rock, Trempealeau and Walworth counties were placed under quar-



antine, while Brown and Waukesha counties have been quarantined since 2009. Emerald ash borer has now been found in 13 counties: Brown, Crawford, Kenosha, Milwaukee, La Crosse, Ozaukee, Racine, Rock, Trempealeau, Vernon, Walworth, Washington and Waukesha.

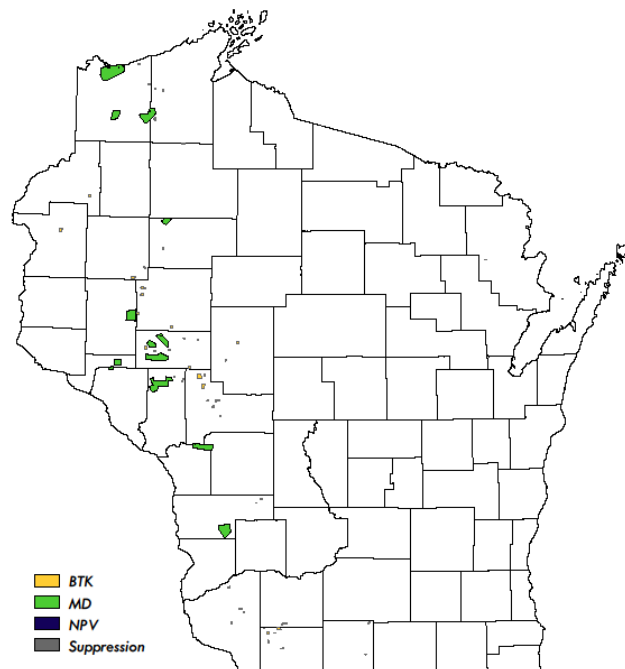
Additionally, the counties of Ashland, Bayfield and Clark, which now have established or breeding populations of gypsy moths, were added to the existing quarantine in 2012. The gypsy moth quarantine currently includes 48 counties in the eastern and central areas of the state.

### 2012 Emerald Ash Borer Survey



Wisconsin Department of Agriculture, Trade and Consumer Protection

### 2012 Gypsy Moth Treatment Sites



Wisconsin Department of Agriculture, Trade and Consumer Protection

**GYPSY MOTH:** Larvae began emerging from egg masses as early as April 2 in response to uncharacteristically warm March temperatures. Aerial treatments started by April 26 and were completed on June 28. The DATCP Slow the Spread Program treated 45,284 acres with Btk, 3,606 acres with NPV (nucleopolyhedrosis virus), and 145,034 acres with pheromone flakes, for a total of 193,924 acres at 64 sites in 22 counties. The DNR Suppression Program also treated a 190-acre site at Governor Thompson State Park in Marinette County with Btk on May 17.

**GYPSY MOTH DEFOLIATION:** Larvae defoliated 14,500 acres of aspen and oak in northern Bayfield County this year, according to aerial surveys. A few large roadside oaks in Marinette County were also heavily defoliated. Reports from DNR Forest Health Specialists suggest larval populations are likely to be higher in 2013.

Analysis of trapping program data revealed no significant change in the average number of moths per trap from 2011 to 2012. The annual survey registered an average of 9.5 moths per trap, compared to 9.4 last year. State moth counts were 173,588 in 18,293 pheromone traps in 2012 and 233,990 in 25,000 traps in 2011. The highest moth counts were reported from Ashland, Bayfield and Jackson counties, while none of the 52 counties trapped this summer registered zero moths.



Gypsy moth defoliation

DATCP Gypsy Moth Program

## CORN ROOTWORM BEETLE SURVEY RESULTS 1999-2012 AVE. NO. OF BEETLES PER PLANT

DISTRICT	1999	2000	2005	2006	2007	2008	2009	2010	2011	2012	*AVE.
NW	0.3	0.9	0.4	0.1	0.4	0.5	0.4	0.3	0.1	0.5	0.4
NC	0.2	0.1	0.8	0.9	0.7	0.9	0.4	0.1	0.1	0.3	0.5
NE	0.4	0.1	0.3	1.8	0.5	0.6	0.6	0.1	0.3	0.6	0.5
WC	0.7	1.1	0.8	0.8	0.4	0.6	0.5	0.4	0.6	0.4	0.6
C	0.4	0.6	0.9	0.7	0.8	0.5	0.4	0.4	0.8	0.5	0.6
EC	0.9	1.5	1.1	2.2	1.4	1.0	0.6	0.3	0.5	0.4	1.0
SW	0.7	0.7	3.2	2.2	0.4	1.1	0.7	0.3	1.1	0.8	1.1
SC	0.6	0.6	1.9	1.7	2.2	1.5	1.1	0.3	1.4	0.9	1.2
SE	0.6	0.2	3.8	1.4	1.0	1.6	0.3	0.2	0.7	0.9	1.1
STATE AVE.	<b>0.6</b>	<b>0.7</b>	<b>1.6</b>	<b>1.4</b>	<b>1.0</b>	<b>1.0</b>	<b>0.6</b>	<b>0.3</b>	<b>0.7</b>	<b>0.6</b>	<b>0.9</b>

Survey results based on average number of beetles per plant per 10 plants examined. \*Survey was not conducted 2001-2004.

## EUROPEAN CORN BORER FALL SURVEY RESULTS 2003-2012 AVE. NO. OF LARVAE PER PLANT

DISTRICT	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	10-YR
NW	0.20	0.13	0.01	0.27	0.24	0.12	0.06	0.08	0.15	0.04	0.13
NC	0.14	0.20	0.36	0.16	0.35	0.18	0.10	0.02	0.07	0.01	0.16
NE	0.23	0.22	0.33	0.23	0.07	0.12	0.12	0.19	0.13	0.05	0.17
WC	0.16	0.05	0.24	0.42	0.52	0.04	0.10	0.08	0.12	0.09	0.18
C	0.44	0.06	0.44	0.51	0.42	0.11	0.06	0.06	0.05	0.01	0.22
EC	0.20	0.22	0.25	0.11	0.21	0.20	0.09	0.01	0.03	0.01	0.13
SW	0.34	0.10	0.49	0.20	0.28	0.05	0.06	0.12	0.03	0.03	0.17
SC	0.51	0.05	0.67	0.38	0.33	0.07	0.02	0.07	0.20	0.01	0.23
SE	0.21	0.02	0.35	0.16	0.12	0.04	0.00	0.00	0.01	0.00	0.09
STATE AVE.	<b>0.30</b>	<b>0.10</b>	<b>0.40</b>	<b>0.29</b>	<b>0.31</b>	<b>0.09</b>	<b>0.06</b>	<b>0.07</b>	<b>0.09</b>	<b>0.03</b>	<b>0.17</b>

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