

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

Below-normal temperatures and crop development delays characterized the 2009 growing season. Mild, dry weather in April permitted early planting of oats, peas, potatoes and some corn, but several weeks of cool, rainy conditions in May interfered with fieldwork. June exhibited erratic weather, sometimes unusually cold and at other times extremely hot. Historic low temperatures occurred in July, slowing development of insects and crops and delaying the season by 1-3 weeks. August growing conditions were generally favorable, and a warm, dry September accelerated late-developing corn and soybeans toward maturity. Frequent rains in October impaired harvest operations and favored the increase of stalk rots and ear molds of corn, which were heavy in individual fields. Despite these adversities, farmers expect to harvest 418 million bushels of corn and 63.6 million bushels of soybeans. If realized, this would be Wisconsin's third largest corn harvest and fourth largest soybean harvest on record.

PEST HIGHLIGHTS

EUROPEAN CORN BORER: The fall survey found a state average of 0.6 borers per plant, the lowest count in 11 years and the second lowest since the survey began in 1942. Survey data from 2009 and the previous several

years continue to suggest that the extensive use of transgenic Bt corn is suppressing corn borer populations in Wisconsin.

GYPSY MOTH: Adult emergence was significantly delayed this season and trap counts were well below normal. The 27,390 pheromone traps deployed as part of the annual trapping survey captured only 119,353 male moths. Cooperators reported an additional 12,922 moths for a total of 132,275. This figure compares to 385,554 last year and is approximately $\frac{1}{3}$ the magnitude of the 2008 flight.

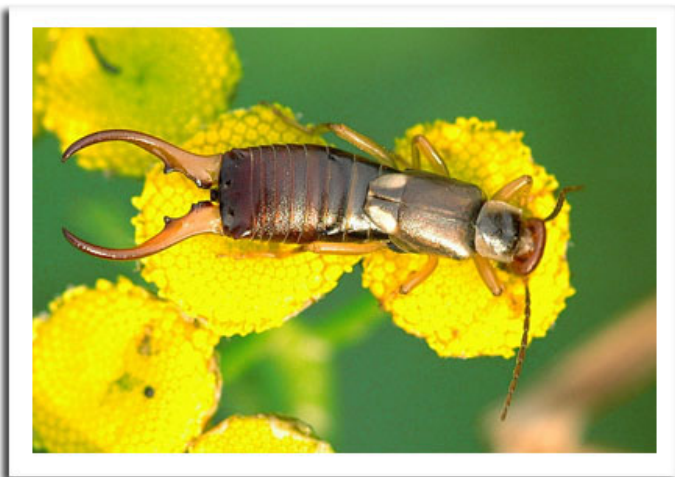
EMERALD ASH BORER: This insect was detected in 3 new counties this year and now infests Brown, Crawford, Kenosha, Milwaukee, Ozaukee, Vernon and Washington counties.

JAPANESE BEETLE: Frequent reports of damage were received from all areas of the state in July and August. A wide variety of plants were affected in home gardens, orchards and nurseries, and many corn and soybean fields had noticeable, but non-economic levels of silk feeding and defoliation. Although some local infestations were severe, beetle numbers statewide were lower than last year.

VIBURNUM LEAF BEETLE: A new state record was established in Dane County on May 20 following the

discovery of several defoliated viburnum landscape plants. This event represents the first detection of the invasive, European beetle in Wisconsin. There has been no indication that infestations exist in other counties.

EUROPEAN EARWIG: These insects were very abundant this season. Large numbers infested homes, backyards, flower gardens and greenhouses, causing damage to dahlias, hostas, marigolds, petunias, roses, zinnias and various other plants. The wet weather last spring probably contributed to the high populations observed.



European earwig

www.commanster.eu

FORAGES

ALFALFA WEEVIL: Larvae were scarce or absent in all but the most advanced fields until May 15, and adults averaged less than 3 per 25 sweeps. Numbers increased gradually to reach peak levels during the first two weeks of June. Timely harvest killed most of the larvae before significant feeding could occur, thus damage to the first crop was light. Pupation began around June 19. After late June, only trace numbers of adults or larvae were encountered in routine monitoring of alfalfa. Minimal insecticidal treatment was necessary in 2009.

POTATO LEAFHOPPER: Adults began appearing in alfalfa on May 5 and nymphs were observed by June 15. Sweep net counts remained low until late June, when surveys yielded economic populations of 2-3 per sweep in scattered southern and west-central fields. Numbers fluctuated through July and August, increasing for a few weeks and then declining markedly after each cutting. By late August, counts ranged from 1-6 per sweep but were generally below 2 per sweep. This insect was less of a

problem in third and fourth growth alfalfa than anticipated. In most cases, the lack of adequate precipitation or rainfall on cut hay caused more loss in yield and quality than leafhopper injury.

PEA APHID: Egg hatch was noted on April 22 in Rock County. Counts in alfalfa were low in May, seldom exceeding 1-2 per sweep. By mid-June, a rapid population increase occurred and as many as 65 per sweep were observed in fields in the south-central district. The highest numbers were found in Columbia, Dane, Dodge, Jefferson and Rock counties, where chemical controls were applied to both alfalfa and peas in some instances. Except for the brief outbreak in June, natural control factors held pea aphid numbers below 9 per sweep for most of the season.

CORN

BLACK CUTWORM: Migrant moths were detected in the state at Janesville in Rock County on March 25, two weeks earlier than in 2008. The first "intense captures" were registered on April 24 and initial cutting dates for the southern counties were projected for the period of May 28-June 4. The peak moth flight occurred from May 1-7. Larvae produced by the spring flight were noted to have caused minor injury to a few corn fields in Crawford, Dane, Rock and Vernon counties by early June, but the degree of damage was inconsequential. No economic injury to corn was attributed to black cutworms this season.



Black cutworm moth

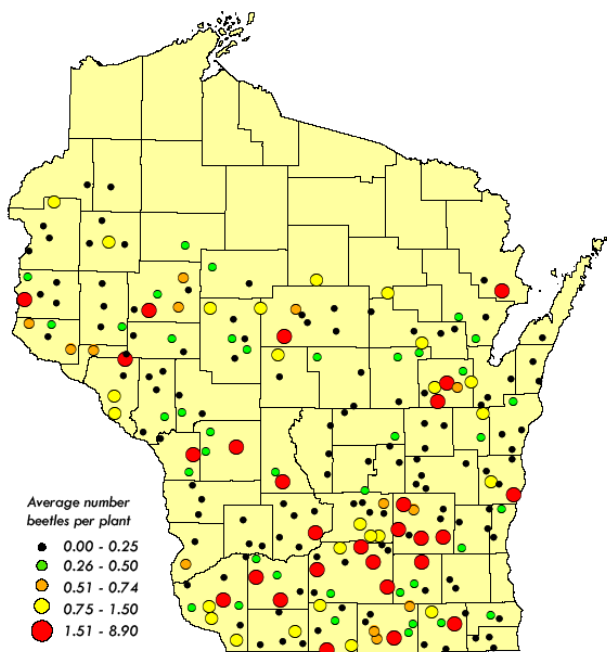
Chris Steeman www.azoresbiportal.angra

CORN ROOTWORM: The annual survey in August documented a decrease in the state average number of

beetles per plant for the first time in 5 years. Population declines were charted in every district, with the largest reductions occurring in the southeast, east-central and north-central areas (see table on page 133). The state average of 0.6 beetle per plant compares to 1.0 last season and a 5-year average of 1.1 per plant. District counts were as follows: northwest 0.4, north-central 0.4, northeast 0.5, west-central 0.5, central 0.4, east-central 0.6, southwest 0.7, south-central 1.1, and southeast 0.3. Populations in 77% of surveyed fields were below the 0.75 beetle per plant level which indicates root injury potential in 2010 if some form of control is not used.

The causes of the decline in beetle numbers are not certain. It is presumed that widespread use of stacked Bt hybrids is a major contributing factor, both in Wisconsin and across the Midwest where populations of the western species were greatly reduced this season. Wet soil conditions last spring also may have caused some degree of larval mortality, thus lowering adult numbers. The map below shows the locations of 229 fields sampled in August. Areas with an elevated risk of root injury to non-Bt, continuous corn are represented by red and yellow circles.

2009 Corn Rootworm Beetle Survey



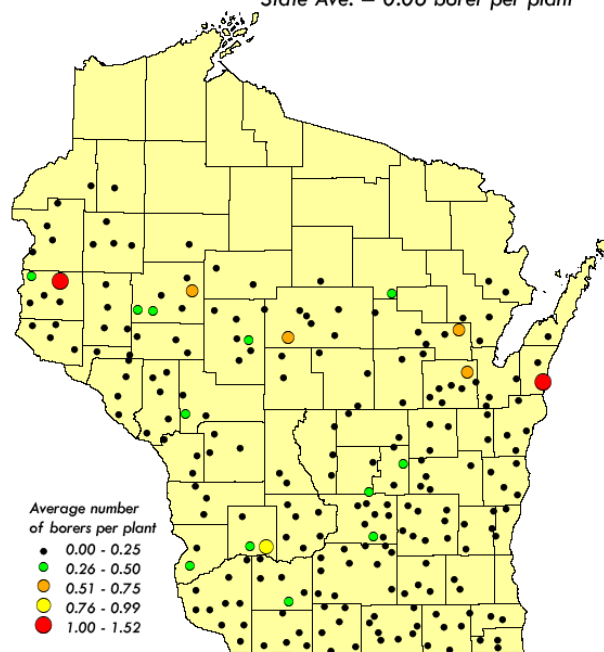
Wisconsin Department of Agriculture, Trade and Consumer Protection

EUROPEAN CORN BORER: Examination of 229 corn fields between September 1 and October 31 found the second lowest population since the survey began in

1942. The state average of 0.06 borers per plant (6 per 100 plants) represents a decline from last year's very low average of 0.09 per plant, and is well below both the 10 and 50-year averages. Populations this fall exceeded 2008 levels only in the southwest and west-central districts (see table on page 133). Less than 1% of the fields sampled had populations that met the treatment criteria of 1.0 or more borer per plant, and 75% had no detectable larval population. Survey data from 2009 and the previous several years continue to suggest that transgenic Bt-corn has become a major mortality factor among the European corn borer population.

2009 European Corn Borer Survey

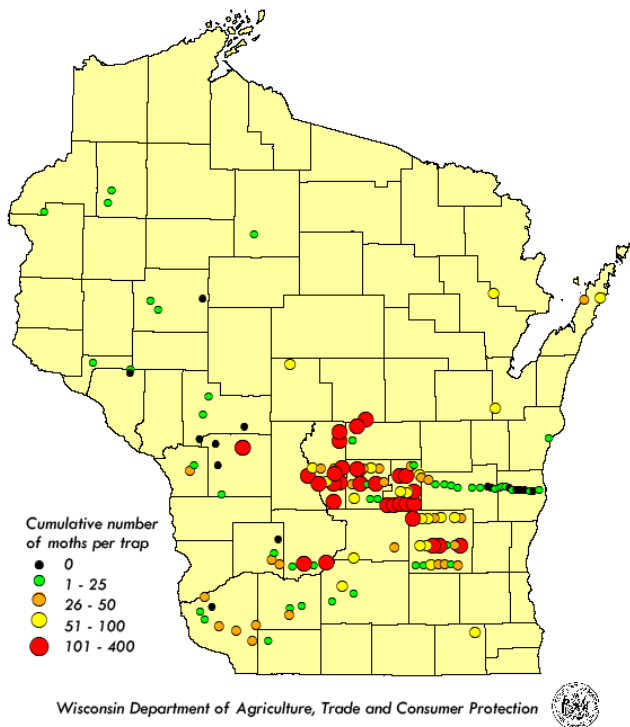
State Ave. = 0.06 borer per plant



Wisconsin Department of Agriculture, Trade and Consumer Protection

WESTERN BEAN CUTWORM: The adult flight period was delayed by record low temperatures in July and the majority of moths did not appear in trap collections until July 27-August 14. Egg deposition was noted by July 18. Although larval populations were found in corn throughout the state in August and September, the heaviest infestations were concentrated on sandy soils in the central district. Pheromone trap counts coincided closely with field observations, documenting the largest moth numbers in the central counties of Adams, Green Lake, Juneau, Marquette, Monroe and Waushara. High cumulative counts for the season were 339 moths in a pheromone trap and 350 moths in a black light trap, both located near Grand Marsh in Adams County. Larvae persisted in some corn fields past October 16.

2009 Western Bean Cutworm Trap Counts



CORN EARWORM: Significant flights of moths did not materialize this season at the majority of pheromone trap locations. Despite favorable migrating conditions and large source populations in the south-central U.S., adult dispersal was suppressed throughout much of August by low nightly temperatures. Moderate counts were registered in Dane County from August 14-21 and numbers escalated to 60-160 moths per trap by August 31, but the flight was considered to have been too minor to produce substantial larval infestations. Larvae were very scarce in corn fields examined during fall surveys. If pheromone trap counts are indicative, the flight was almost 6 times smaller than that of 2008. The cumulative seasonal capture was 990 moths in 2009, compared to 5,624 moths in 2008 and 8,055 moths in 2007.

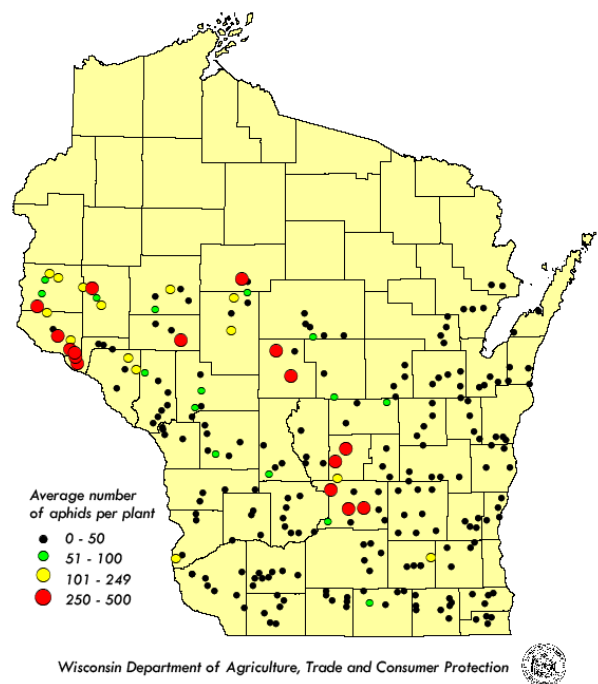
CORN SEED FIELD INSPECTION: Inspections for export regulatory pests were performed on 62 sites in Columbia, Dane, Eau Claire, Grant, Pierce, Portage and Rock counties. Four of the locations in Dane and Eau Claire counties tested positive for Stewart's wilt (*Pantoea stewartii*), while 3 sites in Dane County tested positive for Goss's wilt (*Clavibacter michiganensis nebraskensis*). During a general survey of corn fields, another field in Buffalo County tested positive for Goss's wilt. Gray leaf spot (*Cercospora zaeae-maydis*) was detected in 1 field each in Grant and Pierce counties.

SOYBEANS

SOYBEAN APHID: According to the results of the annual survey, the vast majority of Wisconsin soybean fields did not develop economically significant populations during the R2-R4 growth stages. Of the 247 fields examined in July and early August, 94% had non-economic densities of less than 250 aphids per plant. Economic populations were observed at scattered locations in Columbia, Dunn, Eau Claire, Marquette, Pepin, Pierce, Taylor, St. Croix and Wood counties, but these were exceptional. The survey found the state average density to be 51 aphids per plant, which compares to 72 in 2008, 164 in 2007, 69 in 2006, 118 in 2005, 11 in 2004, and 758 in 2003.

By mid-August the situation had changed considerably. Densities surged above treatment thresholds and remained extremely high for the balance of the season. Swarms of winged aphids descended on urban areas across the Midwest during an unprecedented fall migration to buckthorn, causing great annoyance to humans. Despite the magnitude of the flight, a fungal disease apparently decimated populations by late October and substantially reduced egg counts on buckthorn.

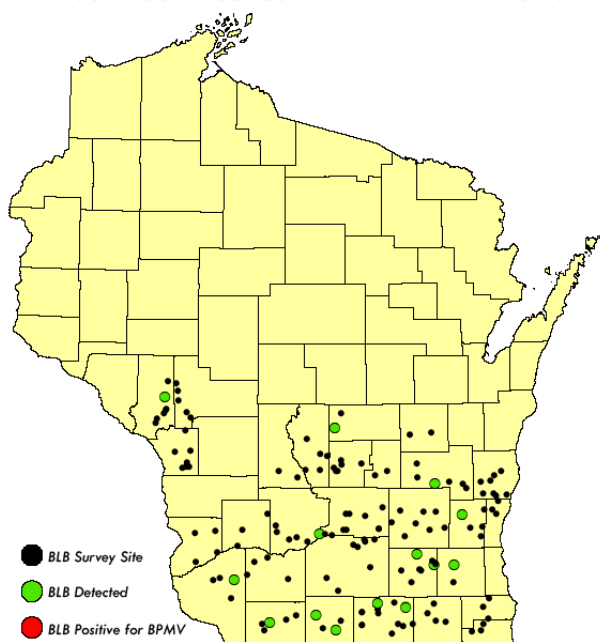
2009 Soybean Aphid Survey Results R2-R4 Growth Stages



BEAN LEAF BEETLE: The spring survey of 152 first growth alfalfa fields conducted from May 18-June 10 yielded just

24 overwintered adults. This figure is comparable to the 21 beetles collected during a similar survey last season, but considerably lower than the numbers found during annual surveys in the years 2003-2007 when several hundred specimens were collected. Beetles were swept from only 14 fields in Columbia, Fond du Lac, Grant, Green, Jefferson, Lafayette, Rock, Trempealeau, Waukesha, Waushara and Washington counties, with no apparent pattern to their distribution (see map). Laboratory testing of the 24 specimens showed all were negative for bean pod mottle virus (BPMV). Based on the low population of overwintered beetles detected last spring, a minimal risk of early-season defoliation and virus transmission was predicted for emerging soybeans.

2009 Spring Survey for Overwintered Bean Leaf Beetles and BPMV in Alfalfa



Wisconsin Department of Agriculture, Trade and Consumer Protection



TWO-SPOTTED SPIDER MITE: Stippling of leaves, extreme yellowing, and other indicators of spider mite infestation became pronounced by late July, prompting the treatment of many soybean fields in the east-central and northern counties. Although symptomatic fields were evident in all areas of the state, problems were most widespread and severe in the eastern and northern areas due to the prevailing drought conditions. Rainfall in August corrected moisture deficits and reduced mite populations by the end of the month.

PHYTOPHTHORA ROOT ROT: For the second year, the incidence of this root rot disease was assessed by a

survey of 50 soybean fields. The start of the survey was deferred from spring to July due to cool weather conditions and slow soybean development. Between July 6 and 17, fields in the early vegetative stages were sampled for seedlings showing symptoms of decline. Seedling roots were tested for *Phytophthora sojae* by culturing on semi-selective media and molecular methods. A molecular based assay using polymerase chain reaction (PCR) of root DNA found 9 positive samples, while culturing found only 3 positive samples. Results were very similar to 2008 when 10 of 50 samples tested positive by PCR and only 4 could be identified by culturing and morphological characteristics. PCR is clearly the more sensitive and effective diagnostic method for detection of this pathogenic organism. Survey findings indicate that *P. sojae* infected about 20% of the state's soybean fields consistently over the last 2 years.

SOYBEAN SEED FIELD INSPECTION: Soil and leaf samples taken from 13 soybean seed production fields found presence of soybean cyst nematode at 7 locations, and yielded negative test results for *Cercospora kikuchii*, *Colletotrichum truncatum*, *Diaporthe phaseolorum*, *Curtobacterium flaccumfaciens* pv. *flaccumfaciens*, bean southern mosaic virus, bean pod mottle virus, tobacco ringspot virus, tomato ringspot virus and *Phytophthora sojae*.

SMALL GRAINS

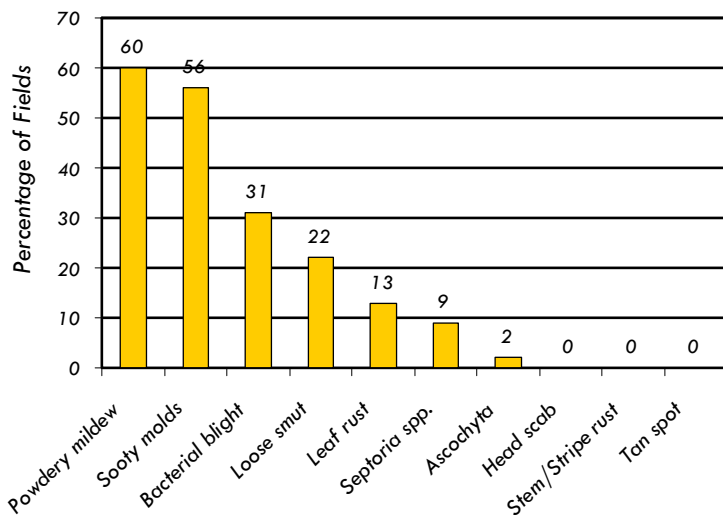
TRUE ARMYWORM: The first moths appeared in Dane, Rock and Wood counties by May 14, and shortly thereafter at other black light trap sites. Although a heavy flight consisting of 1,830 moths was registered at Janesville during the two-week period from June 4-18, no significant problems developed in corn or small grains in the area. Larvae of the second generation reportedly infested wheat in the northeast by mid-July, but the problem was localized and limited to a few fields.

WINTER CUTWORM: Alfalfa and small grains growers were alerted to the possibility of damage last spring by this exotic European caterpillar, the immature form of the greater yellow underwing moth (*Noctua pronuba*). It was speculated that the east-central, northeast and north-central portions of the state were at greatest risk for outbreaks based on numerous reports of larval activity in December and February. Two flights of moths appeared

in black light traps, the first beginning by mid-June and the second in late August, but counts were relatively low. This insect cannot be credited with causing economic damage to crops in 2009.

WHEAT DISEASE SURVEY: DATCP specialists conducted a disease survey of winter wheat between May 8 and June 23, sampling 45 fields in 13 counties. Wheat fields ranged in maturity from Feekes Stage 8.0 (flag leaf visible) to Feekes Stage 10.5.3 (flowering complete to base of spike). Powdery mildew (*Blumeria graminis*) and sooty molds (various fungi) were observed in 60% and 56% of fields, respectively, but severity was very low. Bacterial blight (*Pseudomonas syringae*) was found in 31% of fields, while 22% were infected with loose smut (*Ustilago tritici*). Other diseases of significance and the percentage of fields affected were: 13% of fields with leaf rust (*Puccinia triticina*), 9% of fields with Septoria leaf blotch (*Septoria tritici*), and only 2% of fields with Ascochyta leaf spot (*Ascochyta tritici*). No scab (*Fusarium* spp.), stem rust (*P. graminis* f. sp. *tritici*) or stripe rust (*P. striiformis*) was found in any wheat field sampled this year. Disease incidence was generally very low in 2009.

2009 WINTER WHEAT DISEASE SURVEY



FRUITS

APPLE MAGGOT: Despite cool, dry weather in July, soil moisture levels were very favorable for an unusually large emergence this year. The first flies were captured on traps by July 3, and economic numbers were observed from early July though mid-September. Emergence at most sites peaked from August 7-20. The seasonal high

count of 85 flies on a baited red sphere trap was documented at Mequon in Ozaukee County during the second week of August. Near Rochester in Racine County, red sphere traps in wild trees captured as many as 119 flies at that time. Damage became evident on untreated trees by mid-August, but reports suggested that injury was not as severe as expected. Flies persisted in many orchards through late September.



Apple maggot fly

entomology.ucdavis.edu

CODLING MOTH: The first moths appeared during the week of May 8-14 and the biofix, or sustained capture of moths, was established by May 20 in the south. Low nightly temperatures suppressed flight activity during the next 2-3 weeks, resulting in highly variable counts through early June. Some apple orchards registered as many as 59 moths per trap per week, while others observed no moths at all. The peak first flight occurred at most sites from June 12-18. Adults of the summer flight were reported by mid-July and the second biofix was set from July 24-30. Predictably, the second flight of moths was heavier than the first in several orchards. Codling moth pressure was generally very high again this year.

PLUM CURCULIO: Adult migration into orchards was noted at Mineral Point on May 20 and the first oviposition scars of the season were reported from Rochester by May 22. In most instances fruit injury was not observed until mid- to late-July, suggesting that oviposition activity was delayed this season by unseasonably cool weather. No beetles were registered in pyramid traps after June 25.

JAPANESE BEETLE: Although populations were down in comparison to last year, these insects were very prevalent in apple orchards in the southern counties. The

cooperator from Racine County reported feeding injury on the 'Honeycrisp' and 'Lodi' apple varieties in particular. Spot treatment of individual trees was advised for those orchards that experienced large numbers of beetles.



Japanese beetles

Alex Wild myremecoswordpress.com

OBLIQUEBANDED LEAFROLLER: The comparative trapping survey of the western and eastern OBLR strains documented significantly fewer western OBLR. Pheromone traps for both strains were placed in 7 apple orchards as part of an experimental program to determine the identity of the OBLR population in western Wisconsin. Cumulative counts for the 19-week trapping period ranged from 1-34 (\bar{x} = 10) for the western OBLR, and from 20-92 (\bar{x} = 49) for the eastern OBLR. Six of the 7 participating orchards registered fewer than 12 western OBLR for the entire season. The only site at which moderate numbers occurred was Dodgeville in Iowa County, where totals of 34 western OBLR and 52 eastern OBLR were reported. The trapping survey will be continued in 2010 since data from this season are too limited to draw any definite conclusions.

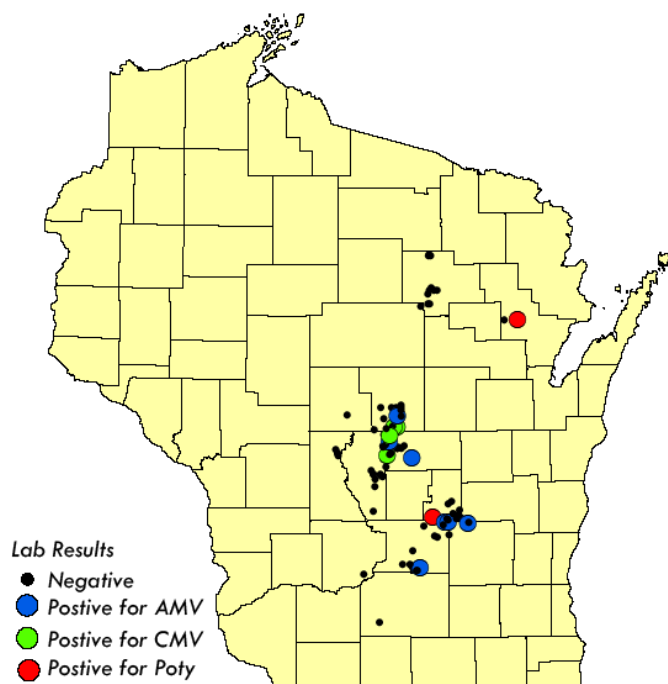
VEGETABLES

VIRUS DISEASES OF SNAP BEANS: State plant pathologists, in cooperation with fresh market producers and processors, conducted a survey for snap bean viruses from July 6-August 13. One hundred and one fields at approximately 48 days post-planting were sampled. Ten leaves were collected at each of 4 locations per field. Disease symptoms were noted and soybean aphid counts were taken from 10 plants at each location.

Snap bean foliage was tested for the following viruses: alfalfa mosaic virus (AMV), bean pod mottle virus (BPMV), cucumber mosaic virus (CMV), and the potyvirus group that includes bean common mosaic virus (BCMV) and bean yellow mosaic virus (BYMV). Most of these viruses are seed transmitted to some degree, and may be spread by aphids.

Laboratory analysis was conducted using reverse-transcription polymerase chain reaction (RT-PCR) for AMV and enzyme-linked immunosorbent assay (ELISA) for all others. Of the 101 samples tested, 7 were positive for AMV, 0 were positive for BPV, 4 were positive for CMV, and 2 were positive for potyviruses (see map). Eleven fields had symptoms of white mold infection. Soybean aphid counts were found to be negligible during the sampling period. Results of snap bean viruses surveys from 2003-2009 are summarized in the table on page 133.

2009 Snap Bean Virus Survey



Wisconsin Department of Agriculture, Trade and Consumer Protection



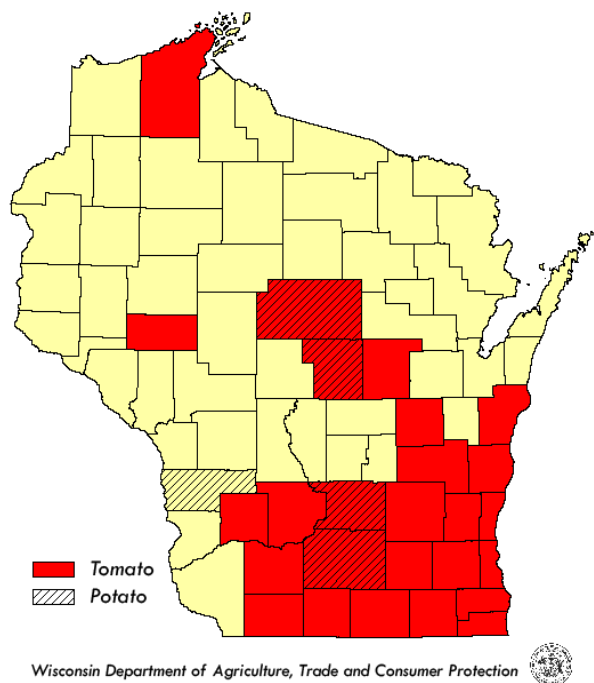
LATE BLIGHT: Infected tomato plants were detected in Dane County on July 29, nearly one month after an epidemic of the disease started on tomatoes in the northeastern U.S. and spread to potatoes from Maine to Virginia. This was the first confirmed case of late blight in Wisconsin since 2002. Frequent reports of the disease were received throughout August, and by mid-Septem

ber, infected tomatoes had been confirmed in 26 counties (see map).

The first infections of potato plants were confirmed on August 18. Potato growers responded with protective fungicide treatments, and many fields were sufficiently advanced to allow vine killing. By contrast, tomato growers were hampered by the lack of effective control options with suitable preharvest interval restrictions. Several commercial tomato growers lost thousands of plants to the disease. The rate of new infections slowed with the dry weather in September, and killing frosts early in October ended the epidemic.

The pathogen strain involved in the 2009 outbreak was determined to be type US#14, mating type A2, which is resistant to the fungicide metalaxyl and highly virulent on potato. Since only the A2 mating type is believed to be present in Wisconsin, the organism is unable to produce the type of spore that overwinters outside of a living host plant.

Wisconsin Late Blight Reports 2009 DATCP and UW Data



Growers are reminded to properly destroy diseased plant material in order to prevent winter survival of the late blight pathogen. Tomato plants may be chopped and plowed down, or allowed to freeze thoroughly before composting. Wisconsin Administrative Code ATCP 21.15(2) requires that potato cull piles be disposed of by

May 20 of each year, and though infection on potatoes was a minor factor in the 2009 season, DATCP inspectors will be vigilant about enforcing the cull pile rule in 2010.

A detailed summary of late blight in Wisconsin this season can be obtained at: <http://www.plantpath.wisc.edu/wivegdis/>.

STRIPED CUCUMBER BEETLE: Yellow sticky traps monitored from May through August captured very few striped cucumber beetles. The high count of 12 per trap was documented at Malone in Fond du Lac County from June 12-18, and 4 of 6 trapping sites reported zero beetles for the entire season. Based upon limited trap data, peak emergence probably occurred during the 4-week period from June 12-July 17. Populations in the southern and east-central areas were much higher than indicated by the trapping survey.

CABBAGE LOOPER: The first migrant adult was reported from the Bourbonnais, IL trap location on May 29. Numbers remained low all season long, and 2 of 4 monitoring locations registered no moths. Damage to cabbage in home gardens and commercial plantings was minimal. Annual flight activity, as measured by pheromone traps, has been extremely light for the last 4 years.

CUCUMBER SEED FIELD INSPECTION: Laboratory results from 8 cucumber seed fields inspected in August found presence of angular leaf spot, Anthracnose caused by *Colletotrichum orbiculare*, and *Phoma cucurbitacearum* (gummy stem blight). All of the above are commonly occurring diseases of cucurbits.

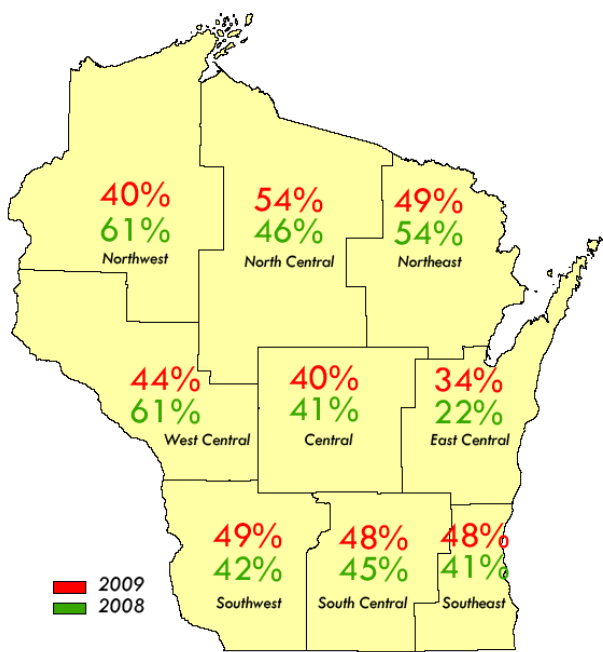
CORKY RINGSPOT: This ongoing survey is 50% complete, with a goal of sampling 200 potato fields in 2009. As of print, all samples tested have been negative for tobacco rattle virus (TRV), the causal pathogen of corky ringspot disease of potatoes.

WEEDS

VOLUNTEER CORN: Surveys conducted in 2009 found infestations of volunteer corn in 525 of 1,185 (44%) soybean fields examined from August-October, verifying that the problem is widespread in Wisconsin. The state average of 44% represents a minor decrease from the

2008 average of 48%. Severity ratings were assigned for fields infested with this weed, and of the 525 positive fields, 25% were severely infested, 30% were moderately infested, and 44% were lightly infested. Average infestation rates by district were as follows: northwest 40%, north-central 54%, northeast 49%, west-central 44%, central 40%, east-central 34%, southwest 49%, south-central 48% and southeast 48%. Survey findings confirm that glyphosate-resistant volunteer corn is a major problem in Wisconsin corn-soybean rotational systems since nearly 1/2 of the state's fields are infested annually. Volunteer corn reduces soybean yield and quality and may facilitate more rapid development of Bt resistance in corn rootworm populations.

Percent of Soybean Fields with Volunteer Corn



Wisconsin Department of Agriculture, Trade and Consumer Protection

EARLY-SEASON WEED SURVEY: Results of the early-season survey of weeds in field crops indicate that some yield loss due to weed competition could be expected for 67% of corn fields and 69% of soybean fields included in the survey. Of the 54 corn fields examined biweekly from June 1-July 27, light yield losses were projected for 28% of fields, moderate losses were projected for 30% of fields, and severe losses were projected for 9% of fields. Of the 40 soybeans fields assessed from June 11-July 7, yield losses were expected to be light for 15% of fields, moderate for 51%, and severe for 3%. Grasses were the most common and abundant of the major weeds observed, noted in 96% of surveyed corn fields and 98%

of soybean fields. Common lambsquarters was the most prevalent broadleaf weed species, found at 85% of corn sites and 90% of soybean sites. This summary completes the 2009 weed survey results given in previous bulletin issues.



Common lambsquarters

peanut.tamu.edu

NURSERY & LANDSCAPE

ORIENTAL BEETLE: The total number of Oriental beetles collected at garden centers this year was 11. Nine were trapped in Washington County and the other 2 were trapped in Milwaukee and Kenosha counties. No beetles were registered in traps in Outagamie, Waukesha and Winnebago counties. While the total of 11 beetles is not particularly high, it represents an increase from 2 beetles collected in Brown and Milwaukee counties during the previous year.

JAPANESE BEETLE: Numbers of Japanese beetles decreased from last year's counts. The annual trapping program yielded 51,035 beetles in 114 traps, a 20% decline from 63,821 beetles collected in 2008. High counts of 201 or more beetles per trap were registered in Dane, Marquette, Sauk and Waukesha counties, while moderate counts of 51-200 beetles were found in Kenosha, Rock and Walworth counties. Twenty-six counties averaged fewer than 50 beetles per trap. Nurseries involved in the shipment of regulated host plants from Japanese beetle infested areas are required to comply with certification requirements of destination states, as specified in the Japanese Beetle Harmonization Plan: <http://nationalplantboard.org/docs/jbcolumn.pdf>.

VIRUSES: Standard inspections found an abundance of viruses this season. Hosta virus X (HVX) was encountered most frequently, noted on the hosta varieties 'August Moon', 'Gold Standard', 'Krossa Regal', 'Royal Standard', 'So Sweet' and 'Sum and Substance'. Other viruses detected were rose mosaic virus (RMV) on tea roses, potyviruses, and tobacco rattle virus (TRV) on bleeding hearts and the hosta 'Undulata'. All nursery stock expressing viral symptoms was removed from sale and destroyed.



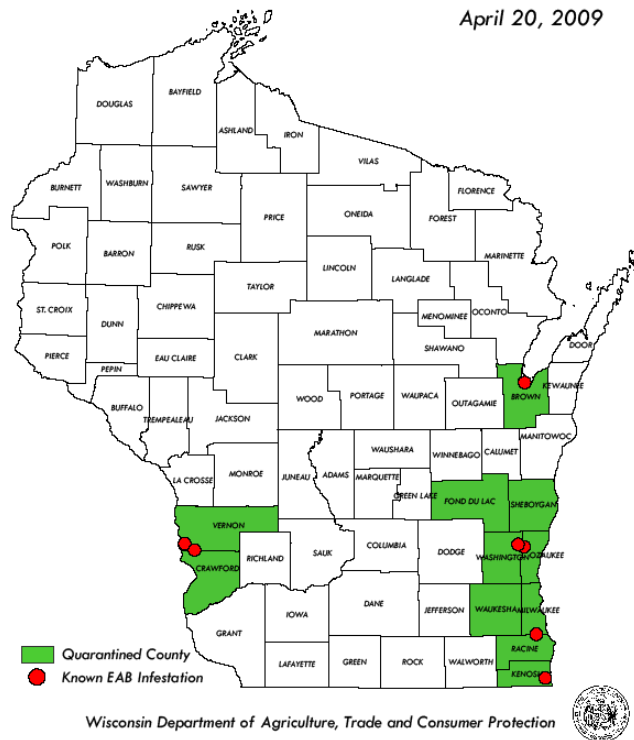
Rose mosaic virus

Liz Meils DATCP

Crawford, Kenosha, Milwaukee, Ozaukee, Vernon and Washington. Quarantines now exist in these counties, as well as Fond du Lac, Racine, Sheboygan and Waukesha.

Wisconsin Emerald Ash Borer Quarantine

April 20, 2009



REJECTED NURSERY STOCK: Nursery stock intended for export to other states may be rejected if infested with certain regulated insects or diseases. Some of the plants included in this category in 2009 were arborvitae and yews rejected due to Fletcher scale, birch with bronze birch borer, coneflower with aster yellows, euonymus with winged euonymus scale, flowering crabapple with gypsy moth, hosta with foliar nematodes, maple with cottony maple scale, rose with rose rust, spruce with Rhizosphaera needle cast, viburnum with viburnum crown borer, and wild cherry with black knot.

FOREST

EMERALD ASH BORER: Intensive trapping by state and federal survey specialists resulted in the capture of 7 specimens, 1 each in Brown, Kenosha and Vernon counties, and 2 each in Crawford and Washington counties. All beetles were presumed to be from local infestations. Adult emergence began on June 4 in western Wisconsin, with peak activity occurring from June 25-July 19. The emerald ash borer has been discovered thus far in 7 Wisconsin counties: Brown,

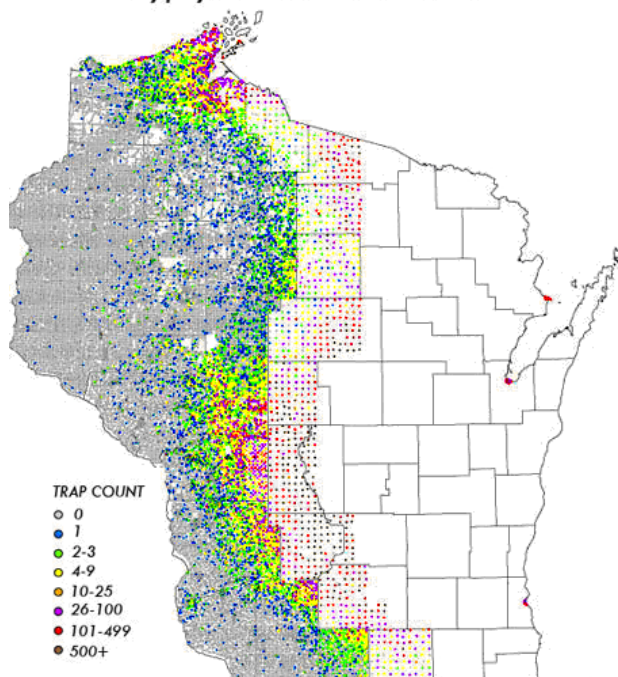
BEECH BARK SCALE: This invasive and exotic pest of American beech was found for the first time in Wisconsin in a rural forested area in Door County. Beech bark scale, *Cryptococcus fagisuga*, interacts with a Nectria fungus to cause beech bark disease. The sample was collected in August by DNR Forest Pathologists and confirmed by USDA Agriculture Research Service taxonomists.

GYPSY MOTH DEFOLIATION: Approximately 3,620 acres of defoliation were observed this summer by aerial surveys as compared to 8,659 acres in 2008, and 23,000 acres in 2007. Most of the defoliation from 2007-2009 was light. Areas of defoliation were noted in the following counties: Columbia, Dane, Kenosha, Marinette, Marquette, Milwaukee, Oconto, Racine, Rock, Sauk, Walworth and Waushara.

GYPSY MOTH: The Gypsy Moth Slow the Spread Program conducted a trapping survey to assess the population of gypsy moth in western Wisconsin, placing 27,390 traps in 42 counties. The number of moths trapped was 119,353, which is about 1/3 of last year's total at

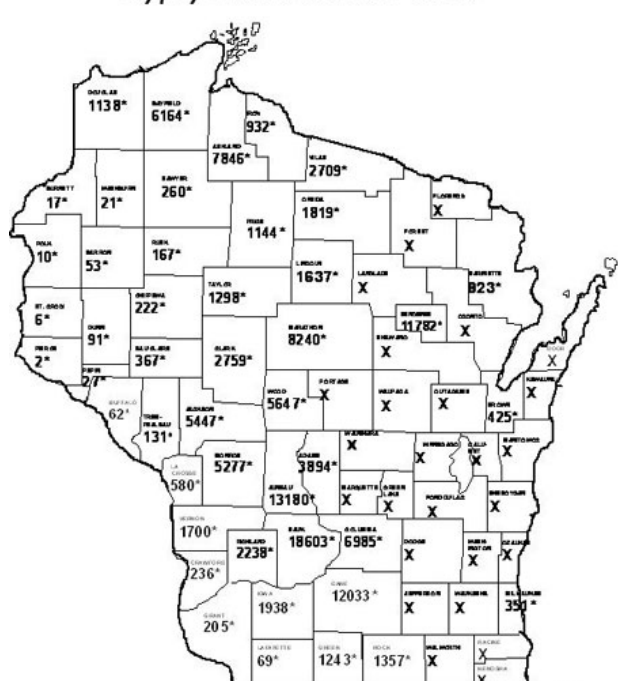
this time. The decrease in counts may have been caused by a combination of factors such as cool weather conditions, high egg and/or larvae mortality due to the winter season or disease, and the efforts of the annual spray program. There were no counties with a zero moth count.

Gypsy Moth Catches 2009



Wisconsin Department of Agriculture, Trade and Consumer Protection

Gypsy Moth Catches 2009



Wisconsin Department of Agriculture, Trade and Consumer Protection

BIOLOGICAL CONTROL

BIOLOGICAL CONTROL: Continued efforts were made to establish biological agents for control of the invasive plants leafy spurge and spotted knapweed. Several thousand beneficial insects, including flea beetles, stem borers and seedhead weevils, have been introduced at sites in Wisconsin since 2003, and this season their numbers were augmented by releases in 11 counties.

LEAFY SPURGE: Releases of the flea beetles *Aphthona lacertosa* and *A. nigricutis*, as well as the stem boring beetle *Oberea erythrocephala*, were conducted at sites in Burnett, Eau Claire, Iowa and Washburn counties. The former species (*A. lacertosa*) was released at 5 sites, while the latter 2 species were released at 8 sites. Introductions in Eau Claire County were intended to reduce populations of both leafy and cypress spurge.

SPOTTED KNAPWEED: The seedhead weevil *Larinus minutus* was introduced at 19 sites in Burnett, Columbia, Eau Claire, Fond du Lac, Grant, Jackson, Polk, Portage, and St. Croix counties. A related species, *L. obtusus*, was released at 15 sites in the same counties, except Jackson. Permits for the release of the root boring weevil *Cyphocleonus achates* were approved for 4 sites in Grant, Jackson, Portage and St. Croix counties.



Spotted knapweed

Clarissa Hammond DATCP

CORN ROOTWORM BEETLE SURVEY RESULTS 1996-2009 AVE. NO. OF BEETLES PER PLANT

DISTRICT	1996	1997	1998	1999	2000	2005	2006	2007	2008	2009	*AVE.
NW	0.0	0.0	0.5	0.2	0.9	0.4	0.1	0.4	0.5	0.4	0.3
NC	0.3	0.2	0.1	0.2	0.2	0.8	0.9	0.7	0.9	0.4	0.5
NE	0.1	0.5	0.2	0.4	0.1	0.3	1.8	0.5	0.6	0.5	0.5
WC	0.3	1.6	0.5	0.8	1.1	0.8	0.8	0.4	0.6	0.5	0.7
C	0.3	0.8	0.2	0.4	0.6	0.9	0.7	0.8	0.5	0.4	0.6
EC	0.6	0.9	0.4	0.8	1.5	1.1	2.2	1.4	1.0	0.6	1.1
SW	1.3	1.2	0.9	0.6	0.7	3.2	2.2	0.4	1.1	0.7	1.2
SC	1.5	1.8	0.5	0.5	0.6	1.9	1.7	2.2	1.5	1.1	1.3
SE	0.8	1.1	0.3	0.3	0.2	3.8	1.4	1.0	1.6	0.3	1.1
STATE AVE.	0.6	0.9	0.4	0.5	0.7	1.6	1.4	1.0	1.0	0.6	0.9

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 2000-2009 AVE. NO. OF LARVAE PER PLANT

DISTRICT	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	10-YR
NW	0.24	0.33	0.44	0.20	0.13	0.01	0.27	0.24	0.12	0.06	0.20
NC	0.04	0.05	0.26	0.14	0.20	0.36	0.16	0.35	0.18	0.10	0.18
NE	0.03	0.07	0.75	0.23	0.22	0.33	0.23	0.07	0.12	0.12	0.22
WC	0.31	0.67	0.71	0.16	0.05	0.24	0.42	0.52	0.04	0.10	0.32
C	0.41	0.48	1.21	0.44	0.06	0.44	0.51	0.42	0.11	0.06	0.41
EC	0.19	0.33	0.44	0.20	0.22	0.25	0.11	0.21	0.20	0.09	0.22
SW	0.39	0.87	0.65	0.34	0.10	0.49	0.20	0.28	0.05	0.06	0.34
SC	0.33	0.48	0.86	0.51	0.05	0.67	0.38	0.33	0.07	0.02	0.37
SE	0.16	0.36	0.61	0.21	0.02	0.35	0.16	0.12	0.04	0.00	0.20
STATE AVE.	0.24	0.40	0.66	0.30	0.10	0.40	0.29	0.31	0.09	0.06	0.29

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

SNAP BEAN VIRUS SURVEY RESULTS 2003-2009 PERCENTAGE OF FIELDS WITH VIRUS SYMPTOMS

YEAR	NO. OF FIELDS	AMV	BPMV	CMV	POTYVIRUS GROUP	SBDV	TSV
2009	101	7%	—	4%	2%	0%	—
2008	25	4%	0%	8%	0%	0%	0%
2006	62	—	0%	0%	0%	—	0%
2005	33	—	0%	3%	9%	—	0%
2003	25	—	0%	72%	4%	0%	—