

# WISCONSIN PEST BULLETIN

Timely crop pest news, forecasts, and growing season conditions for Wisconsin



STATE OF WISCONSIN DEPARTMENT OF AGRICULTURE, TRADE AND CONSUMER PROTECTION PLANT INDUSTRY BUREAU  
2811 Agriculture Dr. Madison, WI 53718 • <http://pestbulletin.wisconsin.gov>

## WEATHER & PESTS

The 2008 growing season was characterized by erratic weather, sometimes extremely wet and at other times very dry. Cool spring temperatures and historic flooding in June forced farmers to delay planting, causing great disparity in development and the condition of crops in the state. July exhibited hot, humid weather and both crops and insects responded well to the heat. Mild, dry days and brisk evenings prevailed throughout August, which largely benefited crops. Despite surplus rainfall early on, inadequate precipitation affected most areas of the state in late summer and during fall. Temperatures were unusually warm in September, helping corn and soybeans to mature, while October conditions were warm and abnormally dry. The combined effect of extreme crop development delays and prolonged periods of dry weather resulted in highly variable corn and soybean yields this season, with many reports of lower than expected yields.

## PEST HIGHLIGHTS

**EUROPEAN CORN BORER:** The fall corn borer population was the lowest in 10 years and one of the lowest in recorded history of Wisconsin surveys. Surveys from 1942-2008 show that this pest has become increasingly scarce since 1997, except for a few anomalous years.

**CORN EARWORM:** An early flight of migrant corn earworm moths beginning June 3 and continuing through June 26 produced heavy infestations of larvae by mid-July and prompted the treatment of sweet corn fields in the southern and central counties. Four successive weeks of large flights of moths in August led to a second round of serious infestations in the state. Moderate numbers of adults were captured in the Chippewa Falls and Marshfield pheromone traps as late as October 3.

**SOYBEAN APHID:** Alates and nymphs appeared by June 18, about 2-3 weeks later than last year, and populations remained low until the final week of July. Densities reached the point where controls were needed by early to mid-August and aphids became a widespread problem for soybean growers much later in the season. The expected decline did not occur until early September, a situation very uncharacteristic for this pest.

**JAPANESE BEETLE:** Extremely heavy populations of this insect were present in yards, nurseries and home gardens in Dane and Jefferson counties, while orchards in Kenosha and Racine counties reported large numbers of beetles by mid-July. Infestations were severe in a few corn and soybean fields in Columbia, Dane, Kenosha, Racine, Rock and Walworth counties. In a Rock County corn field, 1-4 beetles per ear were noted on August 11 and 75-80% of the plants with green silks had been

pruned to the ear tip, thus preventing pollination. Considerable numbers of Japanese beetles were active through mid-August in the southern counties.



Japanese beetles feeding on corn silks Clarissa Hammond DATCP

## FORAGES

**ALFALFA WEEVIL:** A confluence of weather factors prevented the timely harvest of alfalfa in early June, with the result that quality declined, many acres lodged, and alfalfa weevil numbers increased to damaging levels. Populations of late instar larvae in first crop growth flourished by June 13, causing tip feeding injury to soar to 40-100%. Larval numbers began to decline due to pupation one week later, although scattered fields still had comparatively high counts. First growth alfalfa that was cut by the final week of May (before the record rains) sustained very little feeding injury. Timely harvest would have prevented much of the damage that occurred.

**POTATO LEAFHOPPER:** The first potato leafhoppers of the season were swept from alfalfa on April 30, an unusually early arrival date for this migratory pest. The major influx of potato leafhoppers from source populations in the Gulf States did not occur until early June. Reproduction was evident by June 16 when nymphs were noted in alfalfa. With a few exceptions, numbers remained abnormally low in July and August and did not increase to the point where entire fields were yellowed. Populations in alfalfa were the lightest in several years.

**MEADOW SPITTLEBUG:** Eggs hatched by May 7, roughly one week later than in 2007. Nymphs matured by June

20 and adults were the predominant stage in alfalfa fields by the following week. Populations were not heavy enough to warrant control and numbers generally were inconsequential.

**PLANT BUGS:** Adults of the tarnished plant bug were observed in alfalfa on April 23. Four weeks later, nymphs of this species and the alfalfa plant bug were noted. Mixed populations in the southern and central areas were fairly high from late July through mid-August. The tarnished plant bug was noticeably more abundant than the alfalfa plant bug in the southern third of the state. No apparent damage to alfalfa was attributed to these pests.

**PEA APHID:** Nymphs emerged from overwintered eggs in alfalfa by April 30 in Richland, Rock and Sauk counties. Winged forms were found in alfalfa in early June and control treatments in peas started by June 10 in the Central Sands. Populations in alfalfa were mostly low, seldom exceeding 9 per sweep during the growing season.



Pea aphids

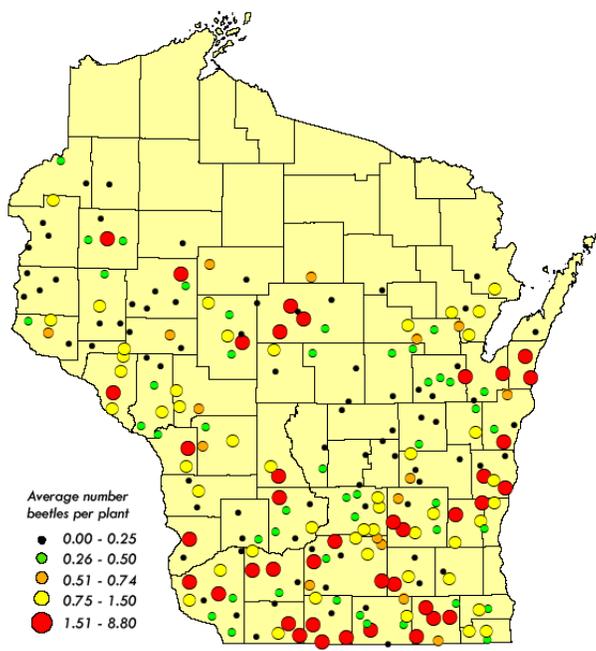
Krista Hamilton DATCP

## CORN

**CORN ROOTWORM:** Field data from the annual survey of adult corn rootworms in August revealed an increase from 2007 populations in 6 of the 9 agricultural reporting districts, including the southwest, southeast, west central, northwest, north central and northeast, and a decrease in populations in the remaining districts. The state average was 1.0 beetle per plant, the same average as in 2007. Average populations by district were as follows: northwest 0.5; north central 0.9; northeast 0.6; west central 0.6; central 0.5; east central 1.0; southwest 1.1;

south central 1.5; southeast 1.6 (see table on Page 152). The western species constituted 52% of the state average population, while the northern species made up about 48%. Research entomologists consider an average of 0.75 beetle per plant to indicate an elevated risk for root injury in continuous corn the following year if some form of control is not used, and 38% of 229 fields in the major corn growing counties had such a count or higher. The obvious conclusion from these results is that there is a high potential for rootworm damage to continuous corn next season.

### 2008 Corn Rootworm Beetle Survey



Wisconsin Department of Agriculture, Trade and Consumer Protection

**BLACK CUTWORM:** Cool temperatures and spring flooding resulted in abundant growth of grass in many fields, conditions highly conducive for egg deposition and early larval development. The first migrant moths dispersing from the south central U.S. appeared in low numbers in Grant and Rock counties on April 7, and intense captures of 8-9 male moths in 2 nights were registered from April 18-24. The primary cutting interval was projected to begin during the week of May 21-28 in the southern counties and continue into June in the central and northern areas. Problems due to this pest were not as prevalent or severe as expected.

**EUROPEAN CORN BORER:** Flights of spring moths developing from overwintered larvae in May and June were distinctly lower than in the previous year, as egg

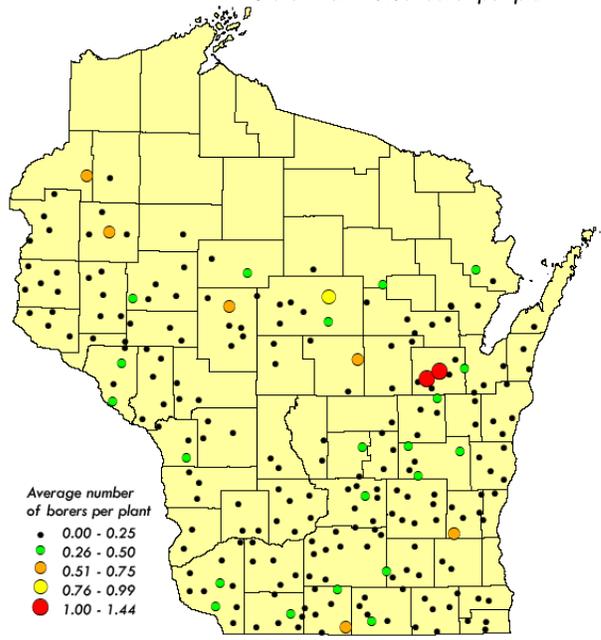
and larval survival was apparently influenced by wet conditions in the southern half of the state. The magnitude of the second flight of moths was nearly 4 times lighter than in 2007.

Results of the fall survey of second generation larvae showed a sizeable decrease in population densities from 2007 to 2008. Populations were well below normal, averaging 0.09 borer per plant (9 borers per 100 plants), the lowest average since 1998. The state average is about one-third that of last season and the 10-year average of 0.31 per plant, and far below the 50-year average of 0.46 per plant. Counts in individual districts were also extremely low. The most drastic reductions were noted in the west central, central and south central districts (see table on Page 152).

Injury to corn from larval feeding was not detected in 64% of the grain corn fields examined, most of which were presumed to be Bt hybrids. Roughly 2.5% of the fields had populations exceeding 0.50 borer per plant and only 1% had populations above the economic threshold of 1.0 borer per plant. The fall abundance survey in 230 fields registered the third lowest population since 1942.

### 2008 European Corn Borer Survey

State Ave. = 0.09 borer per plant

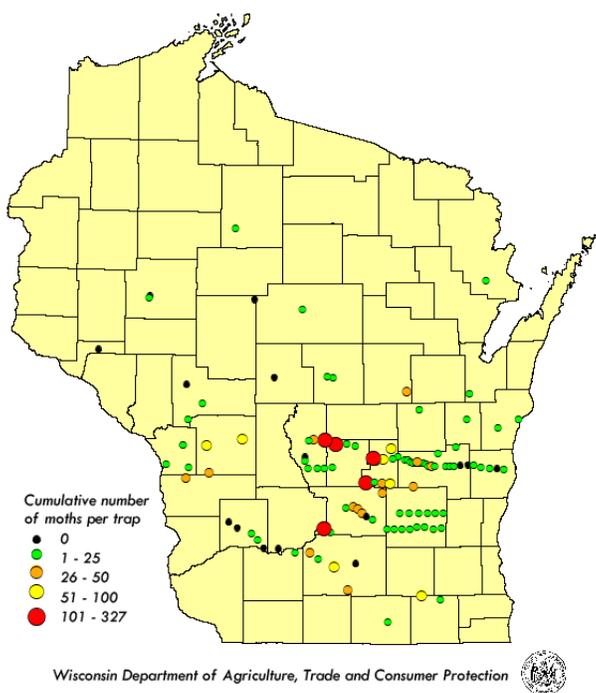


Wisconsin Department of Agriculture, Trade and Consumer Protection

**WESTERN BEAN CUTWORM:** The first moths were captured in a pheromone trap on July 2 in Fond du Lac County, with the peak of the moth flight occurring from

July 25-August 6. Egg masses were noted near Westfield in Marquette County on July 29. Severe larval injury to corn from this flight was reported or observed in Adams, Columbia, Door, Green Lake, Juneau, Lafayette, Marquette and Sauk counties, where exceptional fields had 50-72% of the ears infested in late August. Moth activity declined to low levels by August 21. A cumulative high count of 327 moths for the July-August monitoring period was registered near Princeton in Green Lake County. The 112 Wisconsin pheromone traps captured a total of 2,433 moths in 2008, a minor increase from the 2,178 moths captured in 110 traps in 2007. Although the annual flight was comparable to last year, late season infestations were more prevalent and larvae were far more abundant.

### 2008 Western Bean Cutworm Trap Counts



**CORN EARWORM:** Adults were captured in significant numbers near Janesville, Lancaster and Manitowoc during an early flight from June 3-26. Heavy larval infestations developed in the south central, southwest and central areas as a result of this early migration. The later and more substantial flight brought high numbers of migrant moths into the state from August 5-September 4. In terms of magnitude, the later flight was 23% lighter than in 2007, although late season larval infestations were much heavier. The cumulative seasonal capture was 5,624 moths in 2008, compared to 8,055 moths in 2007. Areas of heaviest infestation occurred in Adams, Columbia, Dane, Dodge, Jefferson and Marquette

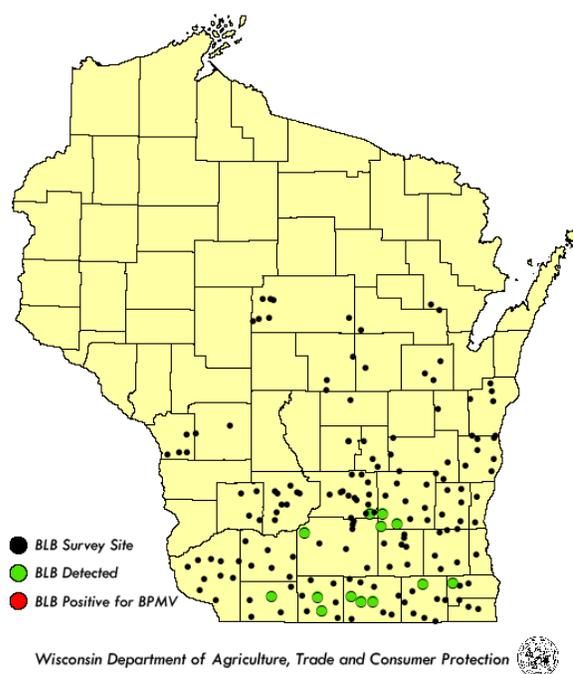
counties, and a few scattered locations in Rock County. Moths continued to be registered near Chippewa Falls and Marshfield as late as October 3.

## SOYBEANS

**BEAN LEAF BEETLE:** The first overwintered beetles were swept from a Walworth County alfalfa field on May 14, about two weeks later than last year. Winter mortality due to extreme cold temperatures was estimated to be high, ranging from 52-69%. The annual survey of 167 first crop alfalfa fields from May 14-June 4 substantiated this prediction, yielding just 21 bean leaf beetles, the fewest obtained since surveys began in 2003.

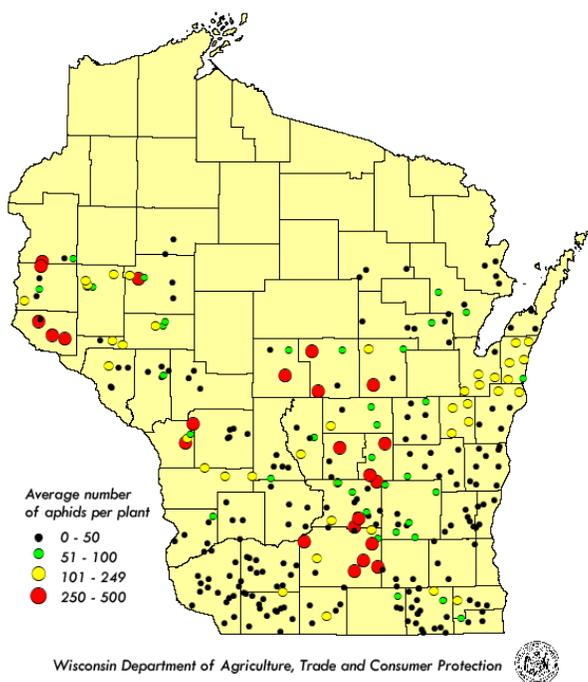
The accompanying map provides an indication of the distribution of overwintered beetles last spring. Each black circle signifies a first crop alfalfa field, and each green circle signifies a field at which beetles were collected. Only 8% (13 of 167) of the first crop alfalfa fields surveyed contained beetles. Laboratory testing of the 21 beetles subsequent to the field portion of the survey showed all were negative for bean pod mottle virus (BPMV), suggesting a negligible risk for early season BPMV transmission to soybeans. This insect cannot be credited with causing any economic damage to soybeans in 2008.

### 2008 Spring Survey for Overwintered Bean Leaf Beetles and BPMV in Alfalfa



**SOYBEAN APHID:** Flooding in June caused a large proportion of soybeans to be planted late or replanted, and this historic event, in combination with cool temperatures in August, significantly impacted soybean aphid dynamics in 2008. Populations increased noticeably later than in other years and remained above economic levels into September. This development is not reflected in the low averages found during the annual survey, which appraised aphid levels at R2-R4, before peak densities were reached.

**2008 Soybean Aphid Survey Results  
R2-R4 Growth Stages**



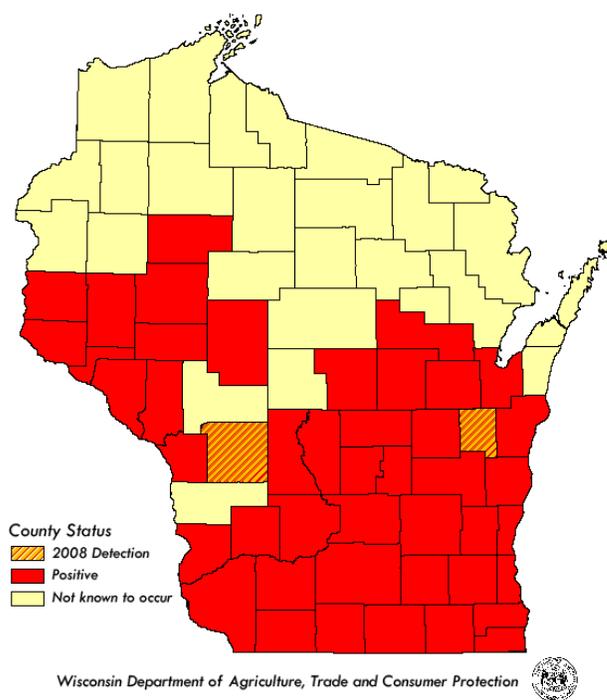
The annual soybean aphid survey conducted from July 21-August 21 showed 92% of the 299 soybean fields examined contained non-economic populations of aphids. Economic or high densities of 250 or more aphids per plant were found at 8% of the sites, distributed principally in the central and northwest districts. Low to moderate populations were observed throughout the southern, east central and northeast districts; numbers were particularly low in the southwest and northeast areas. Averages by agricultural reporting district were as follows: northwest 90 per plant; northeast 34 per plant; west central 121 per plant; central 142 per plant; east central 66 per plant; southwest 14 per plant; south central 98 per plant; southeast 23 per plant. *(NOTE: These figures have been updated since the Aug. 22 issue)* The 2008 state average density of 72 aphids per plant is well below both the 2007 average of 164 per plant and

the 6-yr average of 198 per plant. The highest survey average of 758 aphids per plant was recorded in 2003.

**SOYBEAN CYST NEMATODE (SCN):** The soybean cyst nematode was detected in 2 new Wisconsin counties (Monroe and Calumet) in 2008, bringing the total number of counties where the nematode has been found to 46. Soybean acreage in the counties where SCN has been detected comprise 85.5% of the soybean crop in the state.

This devastating pest has been estimated to cause \$1 billion in yield loss to U.S. soybean growers each year. The role of the nematode in this loss is frequently misdiagnosed, leading growers to defer management practices which would mitigate damage. Soybean growers in all parts of the state are urged to sample their fields for SCN. Testing is available through the UW Plant Disease Diagnostics Laboratory at <http://www.plantpath.wisc.edu/soyhealth/scnsamp.htm> or private laboratories. Fields may be sampled at any time that the soil is not frozen.

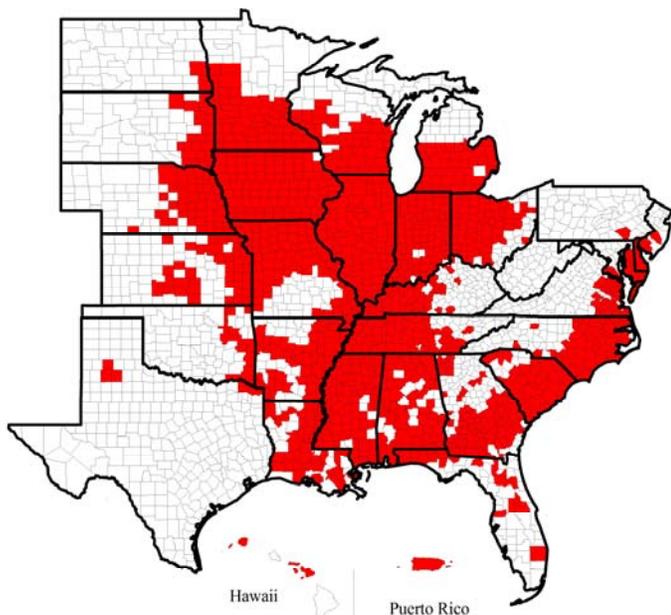
**2008 Soybean Cyst Nematode Survey**



The soybean cyst nematode was first detected in the U.S. in 1954, in Hanover County, North Carolina. Survey efforts in 1957, 1958 and 1962 did not find the nematode in Wisconsin; the first report in the state was made in 1981, in Racine County.

The spread of soybean cyst nematode should provide an object lesson to potato growers. The potato industry faces the potential of an analogous situation with the potato cyst nematodes *Globodera pallida* and *G. rostochiensis*, with the additional concern of a lack of useful resistance in current commercial potato varieties.

**KNOWN DISTRIBUTION OF SCN IN THE U.S., 2008**



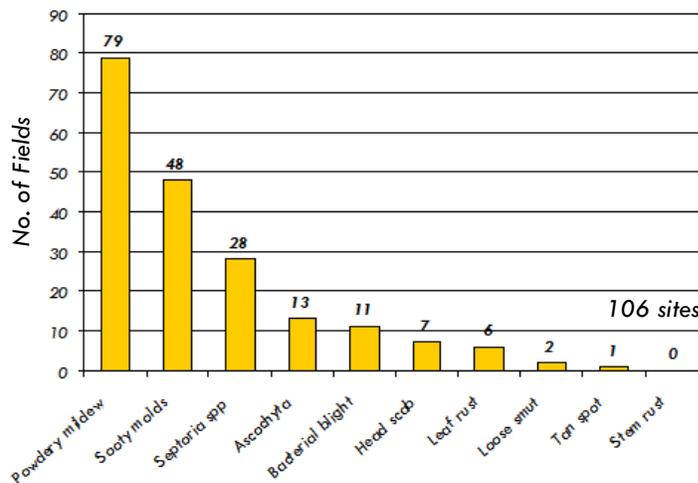
**SOYBEAN DISEASE SURVEY:** In response to flooding and unusual weather conditions, a spring survey of 50 soybean fields in the V2 and V3 stages was conducted from June 23-July 7, 2008. Fields were randomly selected, although surveyors targeted and collected whole plants that exhibited symptoms such as wilting, chlorosis and stem lesions. Samples were tested at the Plant Industry Laboratory for early season fungal pathogens and for nematodes. From the 50 samples collected, the laboratory isolated and identified the following organisms (percent of fields sampled): *Fusarium* sp. (36%), *Phytophthora sojae* (8%), *Pythium* sp. (24%), *Rhizoctonia* sp. (2%). It is possible that some part of the *Fusarium* and *Pythium* isolations represent secondary infections. Soybean plants from 12 sites exhibited diseases of the lower stem: *Phomopsis* sp. (16%), anthracnose (4%), *Verticillium* wilt (4%). Weather related injuries such as flooding, frost or high winds affected soybean seedlings at 16 sites. Root lesion nematodes (*Pratylenchus* sp.) infected 9 samples and spiral nematodes (*Helicotylenchus* sp.) infested 3 root samples. Nematodes were observed emerging from root lesions of fine roots.

Soybean disease survey continued during the growing season and through early fall, with an emphasis on collection of foliar samples for virus testing and a survey for Asian soybean rust (*Phakopsora pachyrhizis*). Two hundred and fifty foliar samples were collected for laboratory analysis. Root rot and suspect foliar symptoms were also sampled at 36 surveyed sites for laboratory diagnosis. Two additional fields tested positive for *Phytophthora sojae* and 4 fields each tested positive for *Phomopsis*, anthracnose and *Fusarium*. Asian soybean rust was not observed during 2008 in Wisconsin. The most common foliar disease was brown spot (*Septoria glycines*). Virus testing is underway, and results will be shared as they become available.

**SMALL GRAINS**

**WHEAT SURVEY:** Field specialists conducted a disease survey of winter wheat between May 8 and June 19, sampling 106 fields in 11 counties which constitute 50% of the wheat acreage in the state. 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). As expected, powdery mildew (caused by *Blumeria graminis*) was the most common disease encountered. Twenty-eight fields were determined to have Septoria leaf spot (caused by several species in the genus *Septoria*). Other diseases of significance include 13 fields with *Ascochyta* leaf spot, 11 fields with bacterial blight, 7 fields with scab, and only 2 fields with symptoms of loose smut (*Ustilago tritici*). Leaf rust (*Puccinia triticina*) was detected in 6 fields at trace levels, and stem rust (*P. graminis* f. sp. *tritici*) was not found in any field surveyed this year.

**2008 WHEAT DISEASE SURVEY**



**TRUE ARMYWORM:** Threatening numbers of 15-20 armyworms per square foot were reported in a Kewaunee County oat field on July 10. Larvae ranging in size from ½-¾ inch had moved from foxtail plants growing beneath the canopy onto the oats and reportedly were “clipping heads at an alarming rate”. Several other oat fields were surveyed in the east central area and only trace numbers were detected. Similarly, field populations in corn were also below economic levels in all areas checked. No problems were reported or observed after mid-July.

## FRUITS

**APPLE MAGGOT:** Localized heavy rainfall stimulated the emergence of apple maggot flies by July 4 in Sheboygan County. Economically significant captures were reported from several orchards throughout July, but it was not until the last 3 weeks of August that an abrupt increase in emergence occurred. The seasonal high count of 35 flies on an unbaited red ball trap was documented near Dodgeville in Iowa County.

**CODLING MOTH:** The first moths appeared by May 16 and the BIOFIX, or continued capture of moths, was established from May 16-29 in the south and central counties. Egg hatch was 50% complete over the southern two thirds of the state by June 27. Near Bayfield, moth activity increased sharply at this time, with high trap counts ranging from 43-101 moths. Adults of the summer flight were reported by mid-July and the second BIOFIX was set from July 17-25 in the south. The second flight of moths was substantially heavier than the first flight in several orchards. Codling moth pressure generally was very high this season.

**OBLIQUEBANDED LEAFROLLER:** Large flights of moths were registered at several southwest and south central orchards throughout August, and the summer generation of larvae caused considerable late season fruit damage in a few cases. Due to the high moth numbers, growers were advised to inspect fruits for larvae throughout September.

**JAPANESE BEETLE:** Orchardists in Racine and Kenosha counties reported captures as high as ½ a jar of beetles per day, noting that these insects showed a marked preference for Honeycrisp apples and for grapes. High numbers of Japanese beetles were still active in the

southern counties by the third week of August. Spot treatment of individual trees was recommended for those orchards that experienced serious infestations.



*Japanese beetles feeding on grape leaves*

*Krista Hamilton DATCP*

**PLUM CURCULIO:** Adult migration into orchards began in Kenosha County by late May and the first apparent oviposition scars of the season were observed in Racine County on May 29. No adults were captured beyond mid-June, but fruit damage in the form of oviposition scars was reported in southern orchards between July 11 and 25, suggesting that plum curculio activity occurred much later than usual this season.

**SPOTTED TENTIFORM LEAFMINER:** Adult emergence began by April 18 in the southeast and by May 8 near Bayfield. Peak activity of the first flight was documented from May 1-16 in southern and central orchards and from May 16-29 in the north. Pheromone trap counts as high as 2,268 moths represented the peak of the second flight, which occurred from July 4-10. Levels of this pest remained relatively high after the third flight began by August 1. Activity continued through early October.

**LIGHT BROWN APPLE MOTH:** Suspects of this exotic pest appeared in pheromone traps during the June 6-13 monitoring period. The unknown moths were later identified as the Sparganothis fruitworm, a native tortricid and a common pest of cranberries. No infestation of the light brown apple moth is known to exist in Wisconsin.

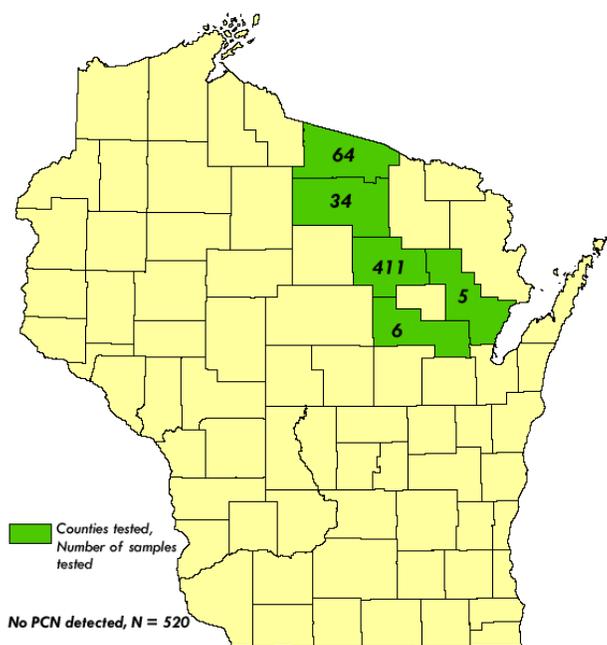
## VEGETABLES

**CABBAGE LOOPER:** Moths were detected in pheromone traps by June 17. Captures increased at the

Bourbonnais, IL location throughout July and again from late September to early October. The trap near Chippewa Falls reported very low numbers all season. On the basis of moth numbers, the degree of larval infestation appeared minor. Adults were active through October 16.

**POTATO CYST NEMATODE:** Continued testing of soil samples from May 1-November 10 showed seed potato fields to be free from the exotic potato cyst nematodes *Globodera rostochiensis* and *G. pallida*. Since May, a total of 520 samples representing over 1 ton of soil from 2,600 acres of Wisconsin seed potato fields have been screened at the Plant Industry Laboratory. No infestation of the potato cyst nematode or the golden nematode has been detected in the state. Wisconsin has conducted rigorous surveys for the potato cyst nematode for 2 successive years and for golden nematode periodically since 1982. The export of potatoes, to Canada in particular, relies on the certification of potato fields and tubers as being free from these regulated pests.

### 2008 Potato Cyst Nematode Survey



Wisconsin Department of Agriculture, Trade and Consumer Protection



## WEEDS

**SPRING CORN WEED SURVEY:** Forty-eight corn fields in 10 counties were surveyed at 3-day intervals from June 5-July 3 to assess weed heights and densities until post-

emergence herbicides were applied. The most prevalent species, or those present at the most sites, were common lambsquarters (96%), velvetleaf (96%), grasses (94%), dandelion (50%), and common ragweed (48%). The survey revealed that herbicides were applied during the 4 week period from June 6-July 3, although most fields (52%) were sprayed from June 13-17. Of the 48 fields, 37 were glyphosate-resistant (Roundup Ready®).

**SOYBEAN WEED SURVEY:** Similar to the preceding survey in corn, weed densities and heights were estimated for 30 soybean fields examined every 3 days from June 19-August 8. The most prevalent weed species were common lambsquarters (93%), velvetleaf (73%), grasses (97%), dandelion (73%), and common ragweed (57%). Herbicides were applied from June 21-August 8, with a median spray date of July 7. An overwhelming majority of the 30 soybean fields (93%) were glyphosate-resistant.

**COMMON LAMBSQUARTERS:** Seedlings emerged by April 25 in the southern counties and averaged ½-1 inch tall throughout May. Individual plants measured as part of the corn weed survey were a mean height of <5 inches before herbicides were applied. Common lambsquarters noted in the soybean fields examined averaged <7 inches prior to treatment. Densities in corn and soybeans averaged 6-50 plants per m<sup>2</sup> and 1-10 plants per m<sup>2</sup>, respectively. Moderate yield loss attributed to this weed was projected for 10 of 30 soybean fields.

**VELVETLEAF:** Emergence occurred by April 25 and the most advanced plants were 2-4 inches tall by May 9. Prior to post-emergence herbicide applications in corn, velvetleaf plants averaged <4 inches, whereas in soybeans, seedlings averaged <6 inches prior to treatment. Plants left unsprayed by July 14 were a mean height of 8-10 inches tall. Densities in both the corn and soybean fields appraised during weed surveys averaged 1-10 per m<sup>2</sup> at the time of spray, indicating that velvetleaf was not a major competitor.

**GRASSES:** The presence of grass species was noted in nearly all of the fields examined and their mean heights exceeded those of any broadleaf species. Prior to treatment, the height of grasses in corn and soybean fields averaged <6 inches and <9 inches, respectively. In 5 of the 30 soybean fields, grasses reached 11-27 inches before control measures were initiated. Densities in both

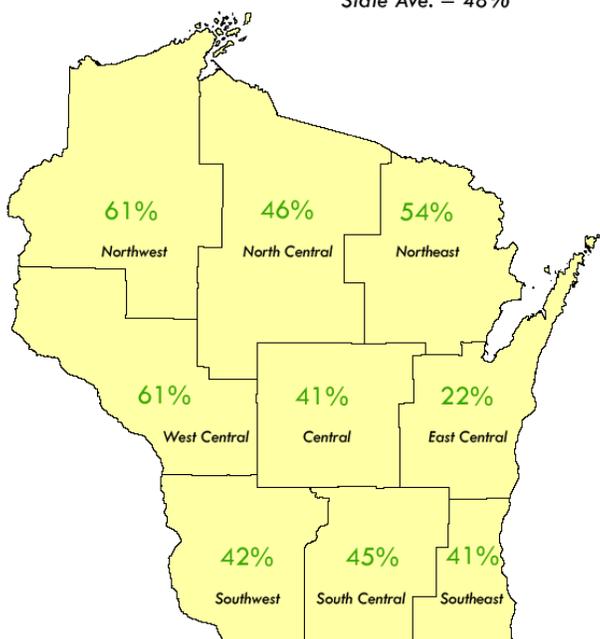
corn and soybeans averaged 6-50 plants per m<sup>2</sup>, although a few exceptional soybean fields contained an average of >500 plants per m<sup>2</sup>. Moderate yield loss from grass competition was projected for 25% of the corn fields and 23% of the soybean fields surveyed.

**FALL CORN WEED SURVEY:** Results of a fall weed survey in corn indicate that weed management programs were very effective in 72% of the fields examined. Incidence and severity ratings were assigned for the total weed population in 230 corn fields and the results were as follows: **TRACE** 20 fields (9%); **FEW** 139 fields (61%); **COMMON** 52 fields(23%); **ABUNDANT** 16 fields (7%). Giant ragweed was observed at 34 (15%) of the locations, fewer than expected.

**VOLUNTEER CORN:** The presence or absence of volunteer corn in soybeans was recorded for 910 fields as part of an informal survey conducted from September 5-October 17. Results of the survey showed that 48% of the state's soybean fields (434) contained volunteer corn. Averages by district were as follows: southwest 42% (n=131); south central 45% (n=126); southeast 41% (n=111); west central 61% (n=171); central 41% (n=160); east central 22% (n=23); northwest 61% (n=77); north central 46% (n=61); northeast 54% (n=50). Volunteer corn was more widespread than anticipated, namely in the west central and northwest regions.

**Percent of Soybean Fields with Volunteer Corn**

State Ave. = 48%



Wisconsin Department of Agriculture, Trade and Consumer Protection



## BIOLOGICAL CONTROL

**LEAFY SPURGE:** Releases of the flea beetles *Aphthona cyparissiae*, *A. czwalinae*, *A. flava*, *A. lacertosa*, and *A. nigricutis* were approved for 12 sites in 7 counties in an effort to minimize local populations of leafy spurge. New releases were made in Door, Douglas and Marathon counties in 2008. The larval stages of *Aphthona* feed on the roots of leafy spurge, whereas the adults consume the leaves and flower bracts.

**ST. JOHNSWORT:** Releases of *Chrysolina quadrigemina* and the closely related *C. hyperici* were made for the first time in Wisconsin at Fort McCoy in Monroe County. Both leaf beetle species are effective natural enemies of St. Johnswort. Approximately 1,750 individuals were released at 4 sites.



*Chrysolina quadrigemina*

Hannu Tanner [www.funnet.fi](http://www.funnet.fi)

**SPOTTED KNAPWEED:** The seedhead weevils *Larinus minutus* and *L. obtusus* were approved for release at 19 sites in 10 counties. Releases were made for the first time in Columbia, Fond du Lac, Iowa, Marquette, Portage and Winnebago counties this season. Research has demonstrated that the larvae may destroy up to 100% of the seed in an infested knapweed seedhead.

*Cyphocleonus achates*, a small root boring weevil, was also approved for release at 4 sites in 3 counties, 2 of which were first time releases (Columbia and Iowa counties). Adults feed on young leaves and the larvae mine the root crown and tap root. Releases of this agent and both *Larinus* species have been conducted at a limited number of sites in the state since 2003.

## NURSERY & LANDSCAPE

**NURSERY INSPECTIONS:** Nursery inspectors monitor Wisconsin's nursery growers and dealers to assure the production and sale of healthy nursery stock and to ensure compliance with laws and regulations. Inspectors also certify nursery stock to prevent the spread of pests and allow the interstate movement of stock. Program personnel inspected 570 of the 1,379 (41%) licensed nursery dealers in the state in 2008, an increase from 497 dealers inspected in 2007. A total of 804 licensed nursery growers were inspected in 2008 compared to 360 in 2007. No new or exotic pests were detected in association with nursery stock. Inspection reports showed the following **TOP TEN** insects and diseases were the most frequently encountered in 2008:

**TOP TEN INSECTS:** Aphids (various species), ash plant bug, eastern spruce gall adelgid/gall makers, Fletcher scale, Japanese beetle, leafminers, potato leafhopper, spider mites, white pine weevil, Zimmerman pine moth.

**TOP TEN DISEASES:** Anthracnose, apple scab, black spot, cedar-quince and cedar-hawthorn rust, hosta/tobacco rattle virus, Phyllosticta leaf spot, powdery mildew, Rhizosphaera needlecast, Septoria leaf spot, shot hole disease.

**JAPANESE BEETLE:** One hundred fifteen Japanese beetle traps were set in Wisconsin nurseries in 2008. Of these, 80 caught beetles. Captures were documented in 17 of 29 counties. The highest counts of 501 or more beetles per trap were recorded in Fond du Lac, Kenosha, Waukesha and Walworth counties, while Dane, Jefferson, Racine and Wood counties averaged 101-500 beetles per trap. The remaining 9 counties averaged fewer than 100 beetles per trap.

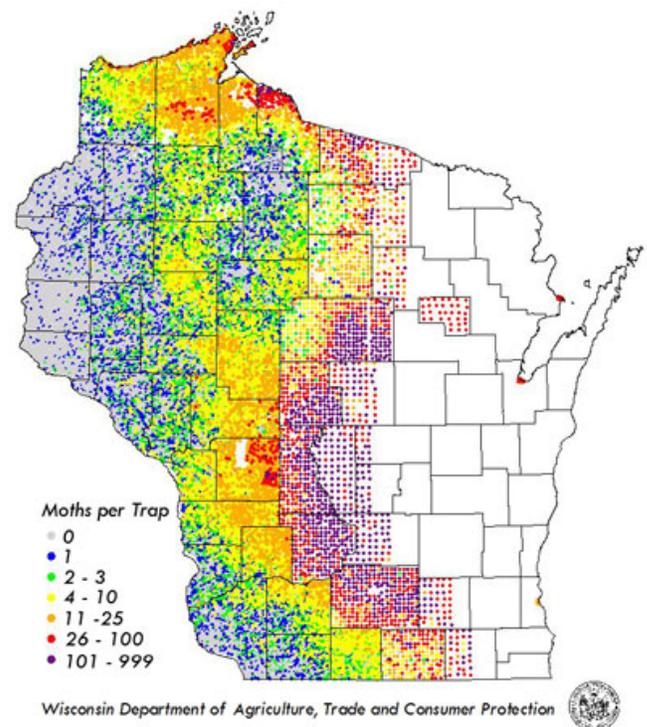
**EASTERN TENT CATERPILLAR:** Larvae emerged from egg cases and began feeding on opening wild cherry buds on April 24. The largest tents in southern Wisconsin measured 12 inches long and 6 inches across by May 22, at which time the larvae were in the 4<sup>th</sup> instar stage (1½ inches long). Heavy foraging occurred in late May and typical defoliation of infested roadside trees was 60-100%. By June 1, full grown larvae began dispersing from tents; large numbers of moths appeared in black light traps by June 20. Populations throughout the central and south central areas were higher in 2008 than

in the preceding several years and complete defoliation of trees was very noticeable along Interstate Highway 39/51 in Columbia, Marquette and Waushara counties.

## FOREST

**GYPSY MOTH TRAPPING PROGRAM:** Extensive trapping in 52 Wisconsin counties resulted in the capture of 385,554 male gypsy moths, a 24% increase over the 293,160 moths captured in 2007. The trapping program documented a wide distribution of traps in the western counties with counts of 7-10 moths. Plausible explanations for the population increase include favorable weather conditions, a surge in the population cycle, normal westward progression of the population front, or larval drift.

Wisconsin Gypsy Moth Catches 2008



**GYPSY MOTH SPRAY PROGRAM:** Aerial applications of Btk for gypsy moth control began on May 15 and were completed by June 13. Approximately 31,064 acres were treated at 24 sites in Ashland, Bayfield, Clark, Green, Iowa, Jackson, Monroe, Richland, Rusk and Taylor counties. Pheromone flake applications to disrupt the mating cycle were made from June 25-July 18 at 15 sites in Ashland, Bayfield, Chippewa, Eau Claire, Jackson, Price and Taylor counties (48,865 acres). Aerial surveys showed about 8,659 acres of defoliation, despite high

mortality due to the gypsy moth nuclear polyhedrosis virus and the fungal pathogen *Entomophaga maimaiga* across the eastern and central counties.

**EMERALD ASH BORER:** Emerald ash borer was positively identified in the state on August 1, 2008 and is now known to occur in Ozaukee and Washington counties. A quarantine area including Ozaukee, Washington, Fond du Lac and Sheboygan counties has been established for the purpose of limiting the artificial spread of emerald ash borers in ash nursery stock, hardwood firewood, timber or other articles. No emerald ash borer larvae have been detected outside of the generally infested area of Newburg, with the exception of two infested trees from an Illinois nursery that were discovered on private lands in Kenosha County and have been removed and destroyed.



*Emerald ash borer galleries*

Mark Guthmiller DNR

## SEED INSPECTION

**CUCUMBER SEED FIELDS:** Inspections of cucumber seed production fields were completed at 7 sites in 2 counties. Trace amounts of angular leaf spot were observed in all 7 fields, while trace amounts of bacterial wilt were noted in 4 fields. Laboratory analysis of leaf samples collected at each site confirmed anthracnose in 2 fields, powdery mildew in 1 field, and gummy stem blight in 5 fields.

**CORN SEED FIELDS:** DATCP personnel inspected 95 seed corn fields in 9 counties (2,416 acres) and tested foliage samples from 84 of the sites for *Pantoea stewartii*, the causal agent of Stewart's wilt. The Plant Industry Laboratory confirmed 2 positive cases of Stewart's wilt in Rock County and 2 cases of maize dwarf mosaic virus in

Columbia County. Tests for wheat streak mosaic virus were negative.

**SOYBEAN SEED FIELDS:** Thirteen soybean seed production fields totaling 195 acres were inspected in Jackson, Rock and Shawano counties for a range of soybean pests, including anthracnose, bacterial pustule/blight, bacterial tan spot, bean pod mottle virus, brown stem rot, *Cercospora* blight and leaf spot, frogeye leaf spot, sudden death syndrome, pod and stem blight, southern bean mosaic virus, soybean cyst nematode, tobacco ringspot virus, tomato ringspot virus, and white mold. Six sites in Rock County were positive for the soybean cyst nematode. All other test results were negative for pests of regulatory significance.

## BLACK LIGHT TRAPS

**EUROPEAN CORN BORER:** Moth numbers were lower than last season at most sites and this was reflected in fewer larval infestations in field corn throughout the state. Black light traps registered the peak of the spring flight from June 19-26 in southern districts and from July 4-10 in central districts, while the peak of the summer flight occurred from August 11-23. The second flight declined to low levels at most trap locations by August 29, and the fall generation of larvae was the third lowest in 67 years. The extent of injury was very light all season.

**TRUE ARMYWORM:** The first migrant adults appeared in the black light trap at Janesville on the evenings of April 17-23. Captures of moths were sporadic through June 6, when traps registered no more than 27 moths per week at any of the 10 monitoring sites. Surveys in the central, south central and west central counties found a widespread but very light armyworm infestation from June 10- 27, with leaf feeding affecting no more than 14% of the corn plants. Relatively low black light trap counts were reported in July and August.

## CORN ROOTWORM BEETLE SURVEY RESULTS 1995-2008 AVE. NO. OF BEETLES PER PLANT

DISTRICT	1995	1996	1997	1998	1999	2000	2005	2006	2007	2008	*AVE.
NW	0.2	0.0	0.0	0.5	0.2	0.9	0.4	0.1	0.4	0.5	0.3
NC	0.1	0.3	0.2	0.1	0.2	0.2	0.8	0.9	0.7	0.9	0.4
NE	0.4	0.1	0.5	0.2	0.4	0.1	0.3	1.8	0.5	0.6	0.5
WC	2.4	0.3	1.6	0.5	0.8	1.1	0.8	0.8	0.4	0.6	0.9
C	0.3	0.3	0.8	0.2	0.4	0.6	0.9	0.7	0.8	0.5	0.6
EC	1.3	0.6	0.9	0.4	0.8	1.5	1.1	2.2	1.4	1.0	1.1
SW	1.3	1.3	1.2	0.9	0.6	0.7	3.2	2.2	0.4	1.1	1.3
SC	3.1	1.5	1.8	0.5	0.5	0.6	1.9	1.7	2.2	1.5	1.5
SE	1.2	0.8	1.1	0.3	0.3	0.2	3.8	1.4	1.0	1.6	1.2
STATE AVE.	<b>1.1</b>	<b>0.6</b>	<b>0.9</b>	<b>0.4</b>	<b>0.5</b>	<b>0.7</b>	<b>1.6</b>	<b>1.4</b>	<b>1.0</b>	<b>1.0</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 1999-2008 AVE. NO. OF LARVAE PER PLANT

DISTRICT	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	10-YR
NW	0.15	0.24	0.33	0.44	0.20	0.13	0.01	0.27	0.24	0.12	0.21
NC	0.03	0.04	0.05	0.26	0.14	0.20	0.36	0.16	0.35	0.18	0.18
NE	0.18	0.03	0.07	0.75	0.23	0.22	0.33	0.23	0.07	0.12	0.22
WC	0.30	0.31	0.67	0.71	0.16	0.05	0.24	0.42	0.52	0.04	0.34
C	0.30	0.41	0.48	1.21	0.44	0.06	0.44	0.51	0.42	0.11	0.44
EC	0.25	0.19	0.33	0.44	0.20	0.22	0.25	0.11	0.21	0.20	0.24
SW	0.57	0.39	0.87	0.65	0.34	0.10	0.49	0.20	0.28	0.05	0.39
SC	0.61	0.33	0.48	0.86	0.51	0.05	0.67	0.38	0.33	0.07	0.43
SE	0.31	0.16	0.36	0.61	0.21	0.02	0.35	0.16	0.12	0.04	0.23
STATE AVE.	<b>0.30</b>	<b>0.24</b>	<b>0.40</b>	<b>0.66</b>	<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>0.31</b>

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