

# 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

A weak cold front moved southeast through the state on July 30, bringing storms and beneficial rain to the southern and eastern counties. Scattered severe weather consisting of powerful downbursts, straight-line winds and damaging one-inch hail occurred during the overnight hours. Large trees were uprooted, power lines were snapped and several roads were blocked until tree debris was removed. Maximum wind gusts on the order of 58-65 mph were reported. The majority of the showers were confined to the eastern half of Wisconsin and minimal amounts of rain fell in the areas west of Dane County. Rainfall totals were generally light, with the exception of a few east-central locations which received 2.0-2.5 inches. This week's precipitation benefited reproductive soybeans, alfalfa and other crops, but did little to alleviate the drought. After what has been one of the warmest months of July on record in Wisconsin, the effects of the heat and prolonged dryness are evident in withered crops and landscapes across the state

## LOOKING AHEAD

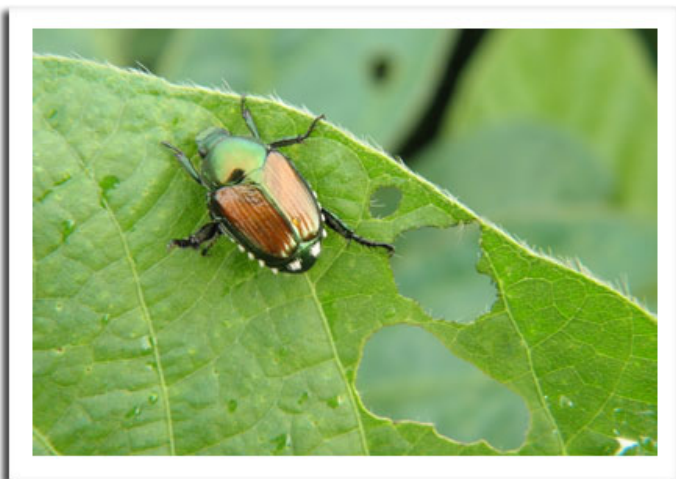
**SOYBEAN APHID:** Densities have increased to moderate levels in a very small percentage of fields since late July, but remain abnormally low in most areas. Two R2-R3 fields in Buffalo County had individual plants with 420-

630 aphids, and fieldwide averages of 38 and 56 aphids per plant. Soybean fields such as these are at risk of developing economic densities in 1-2 weeks and may require treatment by mid-August. All soybean acreage should be examined in the immediate future to evaluate aphid densities. Final treatments must be applied before the R5.5 growth stage.

**CORN ROOTWORM:** The annual beetle survey is now in progress and preliminary results show minor population reductions in the central and south-central areas, which is contrary to July field observations that found the beetles to be extremely abundant in alfalfa, soybeans and vegetable crops. The average count in the central district is 0.5 per plant as of August 1, a decline from 0.8 per plant in 2011. In the south-central area, the average is 1.0 per plant, compared to 1.4 per plant last year. The survey will continue next week in the remaining crop districts and should be completed by mid-August.

**TWO-SPOTTED SPIDER MITE:** This mite continues to be the leading problem for Wisconsin soybean growers. Numerous fields showing severely bronzed, stippled leaves, and in extreme cases, leaf drop, have been noted in all areas of the state in the last 3-4 weeks. The problem is most pervasive the very dry southern and central areas. A large percentage of soybeans have been sprayed in recent weeks and repeated applications may be required for many sites.

**JAPANESE BEETLE:** Locally heavy populations have been observed or reported in Chippewa, Dane, Dodge, Dunn and Eau Claire counties in the past week. Thus far damage attributed to this beetle has not exceeded the economic threshold of 20% defoliation for soybeans in the bloom-pod fill stages or three beetles per ear for silking corn, but levels are approaching these thresholds and continued monitoring of soybeans and late-planted corn is recommended.



Japanese beetle on soybean leaf

Krista Hamilton DATCP

**EUROPEAN CORN BORER:** Egg deposition is expected to continue for another 1-2 weeks. The treatment window for second generation larvae has closed near Beloit, Madison, La Crosse and Sullivan, and remains open only a few more days in the southeast and central districts. Final inspections for egg masses and small larvae should be conducted before 2,100 degree days (base 50°F) are surpassed. Larvae in the southern areas are predominantly in the second and third instars, although some are in the more advanced fourth instar.

## FORAGES

**POTATO LEAFHOPPER:** Nymphs and adults remain abundant in sweep net collections. The average count this week was 2.3 per sweep in Buffalo, Juneau, Monroe, Pepin and Trempealeau counties, although a few individual fields contained very high populations of 4.5-5.2 per sweep. Many of the most heavily infested alfalfa fields are showing foliage with distinct V-shaped yellowing due to this insect, in addition to chlorosis caused by drought stress. Regular monitoring throughout August is advised since the warm, dry weather pattern forecasted for this month is expected to favor leafhoppers.

## DEGREE DAYS JANUARY 1 - AUG 1

LOCATION	50°F	2011	NORM	48°F	40°F
Dubuque, IA	2292	1917	1820	2039	3666
Lone Rock	2249	1838	—	1972	3586
Beloit	2362	1936	1844	2042	3756
Madison	2256	1781	1760	1961	3606
Sullivan	2240	1778	1740	1950	3587
Juneau	2168	1706	—	1899	3475
Waukesha	2049	1580	—	1847	3315
Hartford	2029	1572	—	1837	3288
Racine	2015	1500	—	1872	3270
Milwaukee	1978	1489	1641	1824	3227
Appleton	1999	1533	1682	1824	3242
Green Bay	1908	1434	1563	1784	3122
Big Flats	2026	1576	—	1776	3275
Hancock	2038	1590	1707	1775	3305
Port Edwards	1973	1547	1674	1785	3199
La Crosse	2230	1797	1926	1975	3554
Eau Claire	2048	1632	1731	1880	3301
Cumberland	1773	1458	1613	1735	2948
Bayfield	1469	1133	—	1515	2502
Wausau	1784	1418	1579	1684	2938
Medford	1780	1443	1442	1762	2941
Crivitz	1764	1350	—	1699	2921
Crandon	1579	1282	1232	1561	2668

*Method: ModifiedB50; Sine48; ModifiedB40 as of Jan 1, 2012.  
NORMALS based on 30-year average daily temps, 1981-2010.*

**PLANT BUG:** Representative counts in the central and west-central areas are non-economic and range from 0.3-3.4 per sweep. The tarnished plant bug is currently the most common of the plant bug species found in alfalfa. Nymphs of various maturities were swept from all fields sampled this week.

## CORN

**CORN ROOTWORM:** The annual beetle survey continued during the last reporting period. Preliminary results from the south-central and central areas show a decrease in counts as compared to 2011. Although localized fields in Columbia, Dodge, Green Lake and Waupaca counties contained very high adult populations in the range of 4.0 or more beetles per plant, most sites had non-economic counts of less than 0.5 per plant. The average is 0.9 per plant in the south-central district, 0.5 per plant in the central district, 0.5 per plant in the northwest district and 0.3 in the north-central district. A

count of 0.75 or more beetles per plant signals the potential for severe root feeding damage to non-Bt, continuous corn next season. Economic populations were found in 20 of the 99 (20%) fields surveyed as of August 1.

**CORN EARWORM:** The July migration has resulted in light infestations across the state. Larvae ranging from ¾-1½ inches were observed in Buffalo, Dane, Eau Claire, Trempealeau and Waushara counties in the past week. The moth flight slowed this week at some monitoring locations and increased at others, suggesting that sweet corn producers should continue to check fields regularly for this pest as long as moths are appearing in pheromone traps and green silks are present. Counts during the period of July 26-August 1 were: Aztalan 56, Bloomington 0, Chippewa Falls 6, Columbus 29, Janesville 0, Hancock 50, Manitowoc 4, Marshfield 0, Oregon 20, Ripon<sup>a</sup> 67, Ripon<sup>b</sup> 136, Sun Prairie 36, Wausau 0 and Westport 52.



Corn earworm larva

Krista Hamilton DATCP

**JAPANESE BEETLE:** Damage to silks is apparent in corn fields throughout the state, particularly in the south-central and northwest areas. Japanese beetles are a common problem again this season and are likely to remain so for a few more weeks. Large numbers were noted in corn in Chippewa, Dane, Dodge and Eau Claire counties in the past week and treatment may have been justified in a few instances. Control is suggested for infestations of three beetles per ear when corn silks have been pruned to ½ inch and pollination is incomplete.

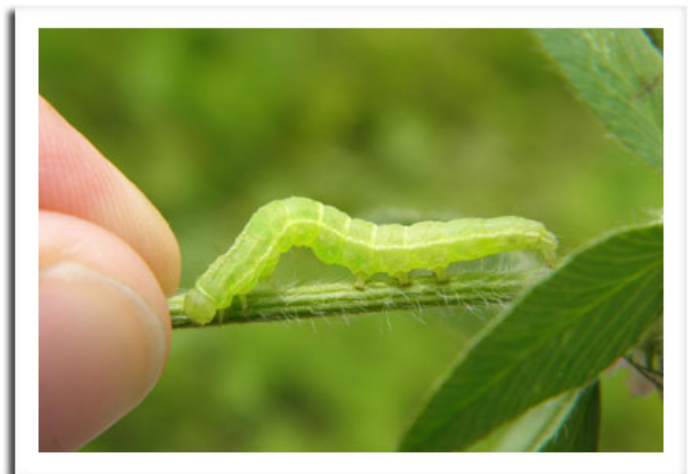
**EUROPEAN CORN BORER:** Second generation larvae are appearing in the ear tips of corn. Surveyed fields in the

central and west-central counties had 2-36% of the ears infested with 1-2 larvae, which varied from newly hatched to third instar. Chemical control is no longer of value in such fields. The treatment window for second generation larvae has closed near Beloit, Madison, La Crosse and Sullivan, and remains open only a few more days in the southeast and central districts. Controls directed against the summer generation must be applied during the period after egg hatch and before larvae bore into the stalks, prior to the accumulation of 2,100 degree days.

## SOYBEANS

**SOYBEAN APHID:** The average count in 150 fields surveyed as of August 1 was 0.9 aphids per plant, the lowest in the history of the survey. Only two fields in Buffalo County had densities of 38-54 aphids per plant, while all others contained fewer than 5 per plant. Most soybeans will not require treatment this year, but exceptions will inevitably occur and fields must be evaluated next week. The benefits of foliar treatment diminish beyond R5 (beginning seed) and control is not economical at R6 (full seed) or later.

**GREEN CLOVERWORM:** Larvae are beginning to appear in soybeans in the southern and central areas. Counts are currently less than 5 per 100 sweeps. Although control is unwarranted at this time, larval populations should be monitored in August since many acres of Wisconsin soybeans have required treatment for control of these worms in the previous two growing seasons.



Green cloverworm larva

Krista Hamilton DATCP

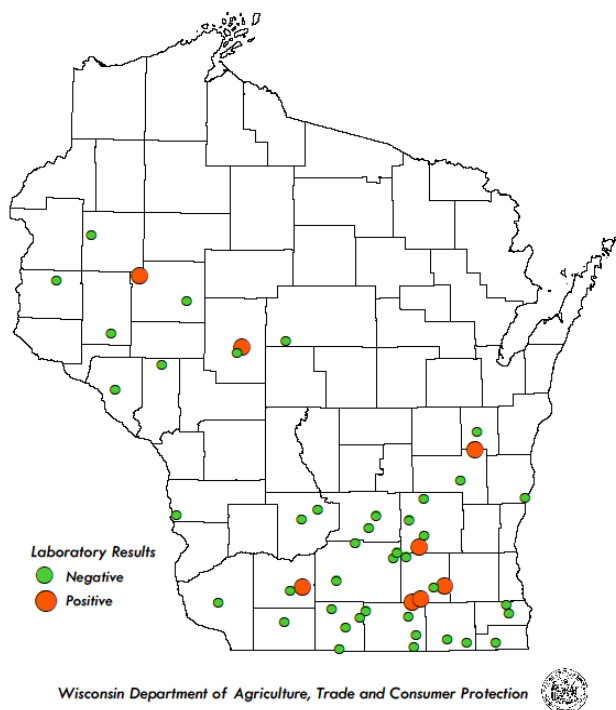
**WHITEFLY:** This insect is extremely abundant in soybeans in the west-central counties. Counts range as high



as 31 per leaf on individual plants. The principal threat from whiteflies in soybeans is yield loss due to sap removal and development of extensive sooty mold on the leaves, similar to the effects of soybean aphids. Whiteflies are not considered to be serious pests in Midwestern soybeans.

**PHYTOPHTHORA ROOT ROT:** DATCP Plant Pathologists surveyed 49 soybean fields for seedling root rot diseases earlier this season, from May 29-July 2. The map below illustrates the field locations and test results. Sampling within fields was biased toward areas susceptible to root rot, such as low-lying areas, field access points and headlands. Although most seedlings showed no above-ground symptoms, laboratory examination of the roots revealed signs of root rot, with many lesions on primary and finer roots. Of the 49 roots examined, eight tested positive for *Phytophthora sojae* (16%), compared to 27% in 2010. All samples also tested positive for *Pythium*. Because *Pythium* species vary in pathogenicity, further diagnostic work will be conducted to determine the species present.

### 2012 *Phytophthora sojae* Survey Results



## FRUITS

**APPLE MAGGOT:** Emergence of this fruit fly has increased in several apple orchards in the past week.

Growers should maintain trapping and control regimens as long as the flies persist and counts exceed established economic thresholds. The high count for the week was 25 adults on a red sphere trap at Gays Mills in Crawford County. Apple maggot activity is likely to continue through early September, or until 2,800 degree days (base 50°F) are reached.

**SPOTTED TENTIFORM LEAFMINER:** Large flights of 730-900 moths were registered at several sites from Racine to Marathon County during the last reporting period. The third and final flight should peak in the next 1-2 weeks in the central and northern areas and decline to low levels by late August.

**CODLING MOTH:** Moths are still appearing in very high numbers in pheromone traps. The peak of the second flight has occurred at most locations, but activity has not slowed and additional treatments may be necessary this month. The average count this week was eight moths per trap, with a high count of 43 moths near Oneida in Brown County.

**OBLIQUEBANDED LEAFROLLER:** It is recommended that apple growers continue to scout for larvae on terminals and any remaining growing points, sites at which fruits are in contact, and in areas where leaves are covering the fruit. Although late-season injury to fruits caused by this insect is usually subtle, large numbers of apples can be infested. Once the larvae have bored into the fruit, no treatments are effective.

## VEGETABLES

**LATE BLIGHT:** Two separate cases of late blight were confirmed on July 31, one in Adams County and the other in Barron County. Based on the geographical distribution of the infected fields and likelihood of aerial spore movement across the central and northern areas in the past week, the UW-Madison recommends immediate fungicide treatment of all Wisconsin potato fields. Scouting efforts should also be intensified, concentrating on field corners and areas sheltered by trees, where late blight symptoms first appear. Plants infected with late blight must be destroyed and properly disposed of to prevent spread of this disease.

**CABBAGE LOOPER:** The Chippewa Falls trapping location registered low numbers of moths for the second

week in a row. Although there is insufficient trap data to indicate the full extent of the current flight, weekly scouting is advised this month and through early September. A 10% infestation threshold should be used from early heading until harvest to protect the market quality of cabbage. The same threshold applies to broccoli and cauliflower once flowers or curds begin to develop.



Cabbage looper larva

Jay scientificgardener.blogspot.com

**SPIDER MITE:** Persistent hot, mostly dry weather continues to favor mite population growth. Symptoms have become noticeable on cucumbers, squash and a variety of vegetables since mid-July. Gardeners and fresh market growers should monitor plantings for mites and consider treatment for severe infestations. Control options include insecticidal soaps or conventional miticides, but these products also reduce natural enemy populations that are instrumental in regulating spider mites.

**EUROPEAN CORN BORER:** The black light trap count at Sparta in Monroe County increased sharply in the last week, from 31 to 121 moths per trap. This development emphasizes the need for continued monitoring of snap beans, sweet corn, peppers, potatoes and tomatoes through late August.

## WEEDS

**LATE-SEASON SOYBEAN WEEDS:** Drought conditions have contributed to widespread weed problems this year, and uncontrolled weeds or weed 'escapes' are now apparent in soybean fields statewide. The most common species noted during recent surveys were giant ragweed, common lambsquarters, pigweed, velvetleaf and

volunteer corn. Late-season spot herbicide treatment may be justified for some fields, but producers who decide to apply herbicides under very dry conditions should be aware that crop injury may occur and weed control could be poor. Selecting an appropriate material based on carryover potential (causing injury to rotational crops) and preharvest intervals is critical. All growers, especially those in the extreme drought zone, are advised to evaluate the existing weed composition in their fields to plan for better control next year.

## NURSERY & FOREST

**PHOMOPSIS BLIGHT:** This evergreen disease is reported to be infecting several varieties of juniper and boxwood in Ozaukee and Washington counties. Plants with phomopsis blight develop yellow spots at the shoot tips of young needles that progress to the stems, causing gradual dieback of new growth and eventual death of the infected branch. Its occurrence can be reduced by pruning out symptomatic branches and twigs 4-6 inches below the diseased area, disinfecting pruning shears between each cut. Maintaining adequate spacing and airflow between plantings will also help to prevent it from spreading.



Phomopsis tip blight on Juniper

Liz Meils DATCP

**CYTOSPORA CANKER:** Colorado blue spruce trees in Ozaukee County nurseries are exhibiting cankers typical of this disease. The canker-causing fungi invade the bark of twigs, branches or trunks of woody plants that are physiologically stressed due to drought, flooding, insects or mechanical injury. Diseased branches should be pruned out during periods of dry weather, while cankers that develop on the trunk require removal and destruction of the entire tree. Many other trees are susceptible to this

disorder, including apple, ash, aspen, birch, cottonwood, elm, maple, poplar and willow.

**GUIGNARDIA LEAF BLOTCH:** Nursery inspectors observed symptoms of this common leaf blotch disease on horsechestnut and buckeye trees in Ozaukee County in the past week. Diagnostic characteristics include irregular shaped, reddish-brown leaf blotches with yellow margins that twist and distort affected foliage as they increase in size and severity. The impact of this leaf blotch on tree health is minimal. Fallen leaves should be collected and disposed of in fall to reduce inoculum levels and suppress disease development.



*Guignardia leaf blotch on buckeye*

*Liz Meils DATCP*

**PINE NEEDLE SCALE:** Light infestations of this scale insect were found on Scots pine in Ozaukee County. At low densities, pine needle scales inflict little damage, but larger populations cause needle discoloration and potentially branch death. Controls are most effective in spring when applied against the crawler stage shortly after egg hatch. This event corresponds with first bloom of lilac, usually around early to mid-May. The proper timing of insecticidal treatments should be determined by monitoring infested pines for newly emerged crawlers.

**GYPSY MOTH:** The state moth count as of August 1 is 61,432, based on examination of 11,046 of the estimated 19,000 traps deployed in 50 counties. Of the checked traps, 3,245 traps were positive for moths. Trap checks are complete in 20 counties and removal is scheduled to begin in the southern areas during the week of August 6.

**CHRISTMAS TREES:** Christmas trees are showing the effects of this summer's unprecedented drought. The

problem is most evident in the southern counties where extensive losses of as many as 5,000-30,000 seedlings have been reported from some tree farms. Conifer seedlings are planted to a depth of about eight inches and their roots are less capable of absorbing moisture than mature trees, making them more susceptible to moisture stress. Many growers will need to plant twice as many next year to compensate for the damage.

**VIRUS SURVEY OF ORNAMETALS:** A spring survey for viruses of ornamentals conducted at 29 Wisconsin greenhouse, nursery and retailer locations found a wide range of plants to be infected. One hundred and ten plants displaying virus symptoms were collected during the period of March 2-June 21 and diagnosed at the DATCP Plant Industry Laboratory. Samples with unusual virus-like symptoms were forwarded to the UMN Plant Disease Diagnostic Clinic for further testing. Of the 110 plants tested, 47 (43%) were infected with one or more viruses.

The most frequently detected virus was tobacco rattle virus (TRV), found in 27 of 90 (30%) plant samples. Nearly all bleeding heart (93%) and barrentwort (100%) samples submitted for testing were infected with TRV. Several other viruses were also detected, namely cucumber mosaic virus, diagnosed in 10 of 103 (10%) samples, and hosta virus X, found in seven of 14 (50%) samples. Another eight ornamental hosts tested by virologists at the UMN were positive for virus particles, including a 'Black Jack' fig grown in California which was infected with fig mosaic virus and a clematis plant with tombusvirus. The results of the survey are summarized in the table on page 109.

Most viruses are readily transmitted through contaminated pruning and propagating tools that move sap from one plant to another, as well as by natural vectors such as aphids, thrips and nematodes. To limit the spread of these destructive plant diseases to garden plants and crops, DATCP requires all virus-infected nursery stock to be removed from sale and destroyed.

# APPLE INSECT & BLACK LIGHT TRAP COUNTS JULY 26 - AUGUST 1

COUNTY	SITE	STLM <sup>1</sup>	RBLR <sup>2</sup>	CM <sup>3</sup>	OBLR <sup>4</sup>	OBLR <sup>5</sup>	AM RED <sup>6</sup>	YELLOW <sup>7</sup>	GDD 50°F
Bayfield	Keystone	11	14	2	0		6	2	
Bayfield	Oriente	10	1	0	0		0	0	
Brown	Oneida	900	11	43	1		0	0	
Chippewa	Chippewa Falls	—	16	12	0		—	—	
Crawford	Gays Mills	196	20	1	7		*25	1	
Dane	Deerfield	110	25	6	—		1	0	
Dane	Mt. Horeb	15	29	6	1		0	0	
Dane	Stoughton	35	20	10	4		0	0	
Dane	West Madison	—	9	3	3		1	0	
Dodge	Brownsville	—	—	4	—		0	0	
Fond du Lac	Campbellsport	280	4	0	6		0	0	
Fond du Lac	Rosendale	56	34	0	2		1	0	
Grant	Sinsinawa	17	41	28	—		—	—	
Green	Brodhead	5	13	2	0		0	0	
Iowa	Mineral Point	165	26	26	1		**2	0	
Jackson	Hixton	24	3	8	0		0	2	
Kenosha	Burlington	275	1	2	2		5	0	
Marathon	Edgar	743	15	11	1		14	45	
Marinette	Niagara	119	0	0	2		0	0	
Marquette	Montello	405	15	4	0		**0	**0	
Ozaukee	Mequon	0	4	5	0		1	—	
Pierce	Beldenville	58	13	9	6		0	1	
Pierce	Spring Valley	104	9	4	0		7	*0	
Polk	Turtle Lake	173	0	6	6		—	—	
Racine	Raymond	318	6	0	4		0	0	
Racine	Rochester	730	37	17	1		*2	0	
Richland	Hillpoint	888	23	15	5		4	**0	
Sheboygan	Plymouth	—	—	—	—		—	—	
Walworth	East Troy	30	3	3	4		0	0	
Walworth	Elkhorn	10	0	0	3		0	0	
Waukesha	New Berlin	275	13	10	6		0	0	

<sup>1</sup>Spotted tentiform leafminer; <sup>2</sup>Redbanded leafroller; <sup>3</sup>Codling moth; <sup>4</sup>Obliquebanded leafroller EASTERN; <sup>5</sup>Obliquebanded leafroller WESTERN; <sup>6</sup>Apple maggot red ball; \*Unbaited AM trap; \*\*Baited AM trap; <sup>7</sup>AM yellow board; \*Two-week counts.

COUNTY	SITE	ECB <sup>1</sup>	TA <sup>2</sup>	BCW <sup>3</sup>	SCW <sup>4</sup>	DCW <sup>5</sup>	CE <sup>6</sup>	CEL <sup>7</sup>	WBC <sup>8</sup>	FORL <sup>9</sup>	VCW <sup>10</sup>
Chippewa	Chippewa Falls	35	0	0	0	0	0	0	2	0	0
Crawford	Prairie du Chien	0	0	0	0	0	0	0	0	0	0
Dane	Mazomanie	3	1	1	0	0	0	0	3	0	0
Fond du Lac	Ripon	9	2	0	0	0	0	0	2	0	0
Manitowoc	Manitowoc	0	0	0	0	0	0	0	0	16	0
Marathon	Wausau	0	0	1	0	49	0	0	7	8	0
Monroe	Sparta	121	0	0	0	1	6	0	2	6	0
Rock	Janesville	0	1	0	0	0	0	1	0	2	0
Walworth	East Troy	0	0	0	0	0	1	0	2	1	0
Wood	Marshfield	0	1	1	2	13	3	0	5	4	0

<sup>1</sup>European corn borer; <sup>2</sup>True armyworm; <sup>3</sup>Black cutworm; <sup>4</sup>Spotted cutworm; <sup>5</sup>Dingy cutworm; <sup>6</sup>Corn earworm; <sup>7</sup>Celery looper; <sup>8</sup>Western bean cutworm; <sup>9</sup>Forage looper; <sup>10</sup>Variegated cutworm.



## RESULTS OF DATCP'S SURVEY FOR VIRUSES OF ORNAMENTALS

COMMON NAME	SCIENTIFIC NAME	VARIETY	VIRUSES DETECTED
Adjugata	<i>Adjugata reptans</i>	'Gaiety'	Cucumber mosaic virus
Astilbe	<i>Astilbe arendsii</i>	'Rheinland'	Cucumber mosaic virus, Tobacco rattle virus
Astilbe	<i>Astilbe arendsii</i>	'Fanal'	Cucumber mosaic virus
Azure monkshood	<i>Aconitum fischerii</i>	'Azure'	Cucumber mosaic virus
Azure monkshood	<i>Aconitum sp.</i>	'Stainless steel'	Filamentous virus particles - <b>UMN</b>
Barrenwort	<i>Epimedium alpinum</i>	'Rubrum'	Tobacco rattle virus
Barrenwort	<i>Epimedium sulphureum</i>		Tobacco rattle virus
Barrenwort	<i>Epimedium x rubrum</i>		Tobacco rattle virus
Barrenwort	<i>Epimedium sp.</i>	'Lilafee'	Cucumber mosaic virus, Tobacco rattle virus
Barrenwort	<i>Epimedium sp.</i>	'Creeping yellow'	Tobacco rattle virus
Barrenwort	<i>Epimedium x youngianum</i>	'Niveum'	Tobacco rattle virus
Barrenwort	<i>Epimedium x versicolor</i>	'Sulphureum'	Tobacco rattle virus
Begonia	<i>Begonia x hiemalis</i>	'Dark Britt'	Impatiens necrotic spot virus
Bleeding heart	<i>Dicentra spectabilis</i>	'Alba'	Tobacco rattle virus
Bleeding heart	<i>Dicentra spectabilis</i>	'Gold Heart'	Tobacco rattle virus
Bleeding heart	<i>Dicentra spectabilis</i>	'Pink'	Cucumber mosaic virus, Tobacco rattle virus
Bleeding heart	<i>Dicentra spectabilis</i>	'Valentine'	Tobacco rattle virus
Clematis	<i>Clematis paniculata</i>		Spherical virus particles - <b>UMN</b>
Clematis	<i>Clematis sp.</i>	'Ramona'	Tombusvirus - <b>UMN</b>
Elderberry	<i>Sambucus sp.</i>	Yellow-leafed	Spherical and filamentous virus particles <b>UMN</b>
Fig	<i>Ficus carica</i>	'Black Jack'	Fig mosaic virus - <b>UMN</b>
Gentian	<i>Gentiana sp.</i>	'Blue'	Clover yellow vein virus
Grapeleaf anemone	<i>Anemone tomentosa</i>	'Robustissima'	Tobacco rattle virus
Hosta	<i>Hosta sp.</i>	'August Moon'	Hosta virus X
Hosta	<i>Hosta sp.</i>	'Blue Angel'	Tobacco rattle virus
Hosta	<i>Hosta sp.</i>	'Golden Tiara'	Hosta virus X
Hosta	<i>Hosta sp.</i>	'Honeybells'	Hosta virus X
Hosta	<i>Hosta sp.</i>	'Paul's Glory'	Hosta Virus X, Arabis mosaic virus
Hosta	<i>Hosta sp.</i>	'Striptease'	Hosta virus X
Hosta	<i>Hosta sp.</i>	'Wide Brim'	Hosta virus X
Hosta	<i>Hosta sp.</i>	Unknown	Hosta virus X
Iris	<i>Iris sp.</i>	'What Again'	Filamentous virus particles - <b>UMN</b>
Larkspur	<i>Delphinium sp.</i>	'Magic Fountains'	Tobacco mosaic virus
Ligularia	<i>Ligularia sp.</i>		Tomato spotted wilt virus
Lobelia	<i>Lobelia sp.</i>	'Hot Blue'	Spherical virus particles - <b>UMN</b>
Oriental lily	<i>Lilium sp.</i>	Casablanca	Lily symptomless virus
Peony	<i>Paeonia sp.</i>	'Eden's Perfume'	Tobacco rattle virus
Peony	<i>Paeonia sp.</i>	'Sarah Bernhardt'	Tobacco rattle virus
Peony	<i>Paeonia sp.</i>	'Yellow Crown'	Tobacco rattle virus
Peruvian lily	<i>Alstroemeria sp.</i>		Tomato spotted wilt virus
Phlox	<i>Phlox sp.</i>	'Pink Lady'	Cucumber mosaic virus, Tobacco rattle virus
Purple coneflower	<i>Echinacea purpurea</i>	'Magnus'	Cucumber mosaic virus
Rose	<i>Rosa, Orange Pink</i>	'Coral Cove'	Rose mosaic virus complex
Rose	<i>Rosa, Pink Double</i>	'Knock out'	Rose mosaic virus complex
Rose	<i>Rosa sp.</i>	'Coral Drift'	Rose mosaic virus complex
Rose	<i>Rosa sp.</i>	'Miss All American'	Rose mosaic virus complex
Rose	<i>Rosa sp.</i>	'Garden Party'	Rose mosaic virus complex
Shamrock	<i>Oxalis sp.</i>		Spherical and filamentous virus particles <b>UMN</b>
Sneezeweed	<i>Helenium</i>	'Chelsey'	Cucumber mosaic virus
Wisteria	<i>Wisteria macrostachya</i>	'Aunt Dee'	Wisteria vein mosaic virus

Records are based on nursery inspections conducted from March 2-June 21, 2012. Diagnostic testing was performed at the DATCP Plant Industry Laboratory and the University of Minnesota Plant Disease Clinic (denoted by **UMN**).