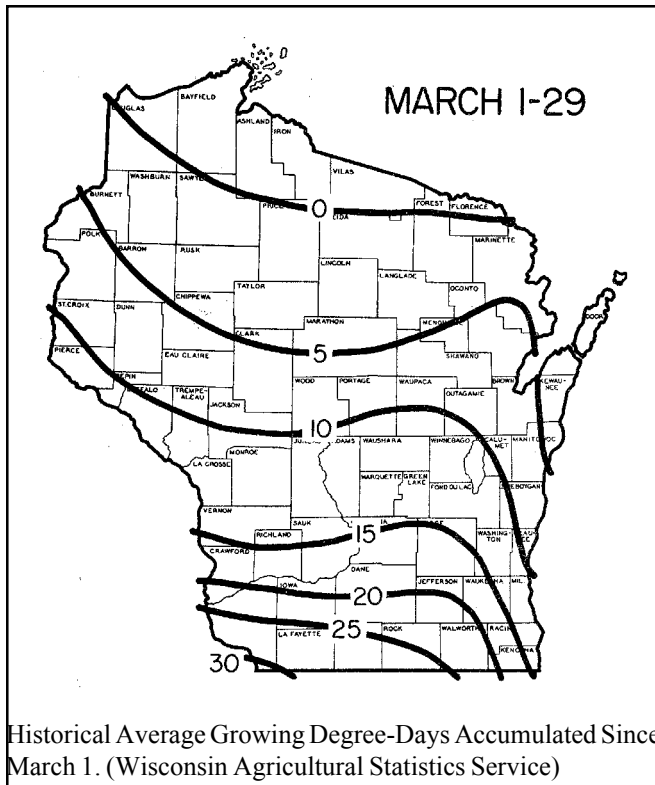




# Wisconsin Pest Bulletin

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**Welcome to the first *Wisconsin Pest Bulletin* of 2003.** You will notice a new name, some changes in the way we present information, and a new publication day. We hope these changes make the Bulletin more useful for you.

Our old name, the *Cooperative Pest Survey Bulletin*, was a bit awkward to get one's hands around. It reflected well the value of contributions and reports from workers across a wide range of agriculture in Wisconsin, and we certainly hope to continue that cooperative reporting, but we feel the new name fits our purpose more directly.

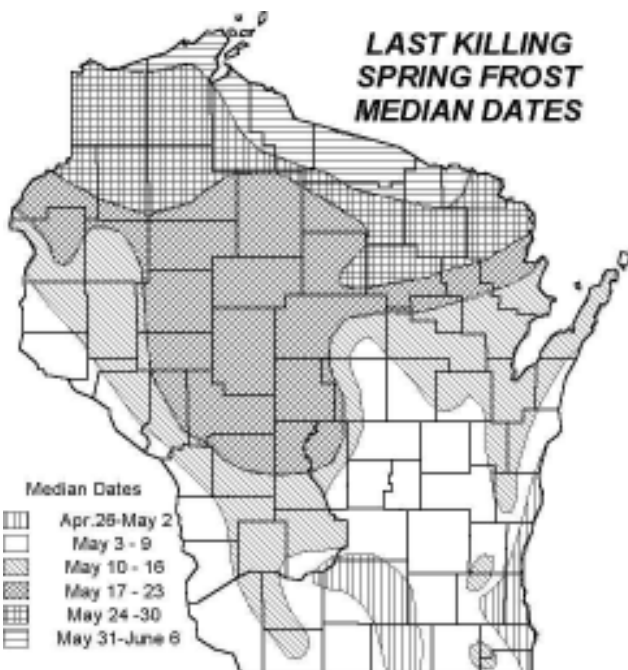
We've revamped some of the headings in the Bulletin. In addition to the ever-popular "Alerts" section, we've added a "Looking Ahead" section. Readers have told us that one of the important functions we provide is an early-warning system, telling them when they should be looking for particular pests. "Looking Ahead" will be the section for that type of notice—pests that the degree days, crop growth stage and historical record tell us we need to begin to watch for. "Alerts" will continue to contain records of new pest finds, early occurrences of significant pests, and interesting information from plant protection agencies around the world.

We've also made a change in the way we report nursery pests. Rather than list all pests reported by inspectors, we hope to provide more substantial information about a smaller number of significant finds.

And finally, we've moved from publishing on Thursday to publishing on Friday. Historically, we went to the printer on Thursday to reach your mailbox on Saturday. Now that the Bulletin is primarily distributed electronically (about 8:1), a Friday schedule gives field personnel another good day in the field to gather data and still beat the old delivery schedule.

We hope these changes will make the Wisconsin Pest Bulletin a more valuable tool in your crop production efforts. We welcome your comments anytime: [bulletin@datcp.state.wi.us](mailto:bulletin@datcp.state.wi.us) or 800-462-2803. Here's our wishes for a safe, productive and relatively pest-free growing season.

**ALERTS**





Southern wilt on geraniums

**Southern wilt on geraniums** – For the second time in four years, geraniums (*Pelargonium* sp.) in a Wisconsin greenhouse were determined to be infected with *Ralstonia solanacearum*, the bacteria which causes a disease known as **southern wilt** on many ornamentals, and as **brown rot** on potatoes. The diseased plants originated as cuttings in Kenya.

The species *R. solanacearum* has been subdivided by researchers a number of ways: most commonly by *race*, depending upon the host range of the isolate, and by *biovar*, determined by carbohydrate utilization in culture. Race 1 is a pathogen of tomatoes and other solanaceous plants, and is present in the southern United States; race 2 is the cause of



Bean Leaf Beetle Adult

Moko wilt of bananas, and race 3 biovar 2 is the causal agent of brown rot of potatoes, and is also pathogenic on other crops in the Solanaceae family. The bacteria isolated from the geraniums is race 3 biovar 2, a strain of the pathogen not known to be established in the U.S. Concerns about *R. solanacearum* include the fact that it may be spread in water or by common greenhouse practices such as budding or pinching.

DATCP, in cooperation with the USDA, inspected all 13 greenhouses in the state known to have received potentially infected geraniums, and a number of additional greenhouses. All greenhouses with Kenyan *Pelargonium* material of a certain age were issued Emergency Action Notifications (a holding order) by the USDA. Since then, six greenhouses have been released from the holding order. Plants at four greenhouses tested positive for *Ralstonia* through laboratory analysis. Plants at three locations were incinerated with the fourth pending. Greenhouses are disinfected after plant destruction. To date, the Department has overseen the destruction of over 10,000 geraniums. Nationally, 896 sites have been inspected, and *Ralstonia*-infected geraniums found at 68 greenhouses. Holding orders have been lifted at 283 sites. Additional phytosanitary requirements have been placed upon geraniums entering the U.S. in an attempt to prevent further entry of diseased plants.

**Pesticide crisis exemption** - DATCP has received a crisis exemption for the use of Gaucho 480 Flowable® pesticide as a seed treatment on soybean seed for control of bean leaf beetle and bean pod mottle virus. Use is restricted to seed production or high-grade food production. For more information, contact Ed Bergman at 608-224-4546.

**Bean leaf beetle** - Growers who are anticipating problems with bean leaf beetle in 2003 based on last summer's levels of defoliation may get a break. A review of 2002-2003 winter temperatures indicates that this winter was not favorable to the survival of Wisconsin's overwintering bean leaf beetle population. According to the predictive model used, nearly 100% mortality can be expected north of Marathon Co. In Milwaukee and Waukesha Cos., 65-70% mortality is expected. In most other regions we can expect have between 75-85% mortality of the overwintered population. See **Soybean** section below for more details.

**Bean pod mottle virus & bean leaf beetle** - Recently a lot of confusing and contradictory information concerning the management of bean leaf beetle and bean pod mottle virus has surfaced, leaving many growers with more questions than answers. A novel management approach advocating spraying once early season and once mid-season to reduce the incidence of both bean leaf beetle and the BPMV has emerged from research conducted at Iowa State University. Although this strategy is sensible for Iowa growers, here in Wisconsin it is not clear what percentage of overwintered

beetles are able to transmit BPMV; therefore, we do not recommend implementing this management strategy.

Last summer an increasing number of Wisconsin soybean growers observed bean leaf beetle bean defoliation, but whether BPMV transmission was a factor is another story. Growers who suspect BPMV was the causal agent of green stem symptoms at harvest should have plants or seed tested to positively identify the problem. If BPMV symptoms have not been confirmed, there is not enough evidence to support the use of insecticides.

**LOOKING AHEAD**

*A brief forecast of pest-related events growers can anticipate in the upcoming week*

**Weather and Pests-** A minimal amount of insect activity was noted on days when temperatures rose into the 50s, but activity will be temporarily slowed by the cooler temperatures expected in the days ahead. A late winter snowstorm is expected in the north, while light rain, possibly turning to light snow, is falling over much of the central and southern portions of the state. Early field work and planting of spring grains will be delayed for now, perhaps disappointing farmers who had hoped to start the season. Field survey work is scheduled to begin next week, if weather permits. Degree day accumulations are not available at this time.

**Black cutworm** – University of Illinois Extension reports suggest the northward migration of moths has begun. The Illinois Extension Pest Management and Crop Development Bulletin documented the first pheromone trap captures of the season on March 18, indicating that the arrival of black cutworm moths in southern Wisconsin isn't far off. Cutworm infestations are more likely to develop in grassy fields, late-planted fields and fields subject to spring flooding. Seedling corn is most disposed to cutting during the 10-14 days following emergence.

**Alfalfa weevil** – Alfalfa weevils are one of the first pest insects to resume activity in the springtime. With rising temperatures, adults will soon be on the move from overwintering sites to alfalfa fields. First and second crops will be most susceptible to larval feeding damage. See **Alfalfa** section for more details.

**Spotted tentiform leafminer** – Apple growers should place pheromone traps for spotted tentiform leafminer within the next few days. Spotted tentiform leafminer adults begin appearing in pheromone traps at 22-70 DD (base 50°F). Larvae can be anticipated at 209-231 DD, and the first leafmines at 329-402 DD.

**Redbanded leafroller** – Place traps for redbanded leafroller as well. The first redbanded leafroller

adults can be expected between 25-78 DD (base 50°F).

**CORN**

**European corn borer** – Based on fall 2002 survey results, we're anticipating a moderately-sized first flight of moths later this spring. The statewide average density of 0.66 borer per plant was 26% higher than fall 2001 larval densities, 13% higher than the 10-year average and 17% higher than the 50-year average. With the exception of the southwest, all agricultural districts showed population density increases.

Although we are expecting a moderate first flight of moths, it is not clear if the European corn borer will become an economic threat in 2003. If heavy precipitation, low humidity, low evening temperatures, and/or strong winds prevail during the period when corn borers are mating and reproducing, the first generation population could decline dramatically. Moths of the first flight begin emerging at 374 DD (base 50°F). We'll monitor flight activity closely at that time for a better indication as to what's to come.

**Corn flea beetle & Stewart's wilt** – Review of winter temperatures from weather stations across the state indicates corn flea beetle survival and the threat of Stewart's wilt in 2003 are low. During mild winters, more corn flea beetles are expected to survive, increasing the risk of Stewart's wilt for the following summer, but winter temperatures were low enough in most areas to lower beetle survival rates. Presently we use a model developed at Iowa State University to determine the predicted risk for Stewart's disease based on monthly mean ambient air temperatures for December, January and February (see below). This model, combined with the low prevalence of Stewart's wilt during the preceding growing season suggest: 1) there was not sufficient levels of inoculum to expect a large percentage of the corn flea beetle population to be carrying the Stewart's wilt bacterium, and 2) in general, the risk for Stewart's wilt in 2003 is low to very low throughout most of Wisconsin.

Station	Dec Ave Temp	Jan Ave Temp	Feb Ave Temp	Risk
Boscobel	27.2	17.5	18.1	low
Duluth	20.1	9.0	9.1	very low
Green Bay	26.3	16.3	14.0	low
LaCrosse	27.7	16.6	17.9	low
Madison	27.4	17.7	18.4	low
Medford	23.6	12.2	11.8	very low
Milwaukee	30.1	20.2	21.5	low
Prairie du Chein	26.8	16.8	17.6	low
Rhineland	21	9.7	8.9	very low
Sparta	25.2	15.0	15.8	low
Wausau	23.7	12.5	11.8	very low



Alfalfa weevil larva



Alfalfa weevil adult

**FORAGES**

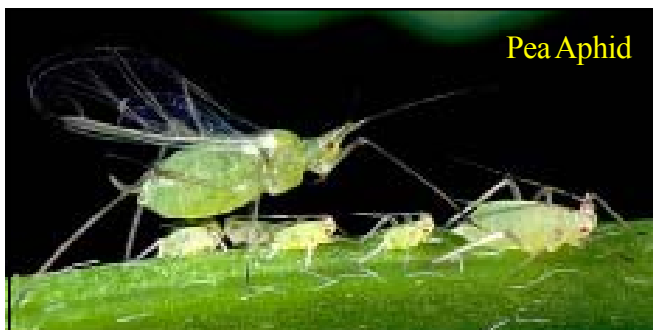
**Alfalfa weevil** – This early-season alfalfa pest has been termed the most destructive pest of first crop alfalfa in the U.S. In the days and weeks ahead female alfalfa weevils will be emerging from their overwintering sites and resuming egg laying activity in alfalfa fields. Adults are dark brown beetles, 3/16” long, with a pronounced snout. The larvae are bright green with a single white longitudinal strip and a black head capsule. Larval feeding, which lasts approximately 3-4 weeks, is the primary source of damage.

At an average temperature of 60°F, eggs hatch within 18 days. Generally, feeding by young larvae is insignificant, but as larvae mature and grow in size, the tip damage associated with their feeding can become quite pronounced. First crop and second crop regrowth are most vulnerable to attack. The heaviest damage typically occurs when the first cutting is

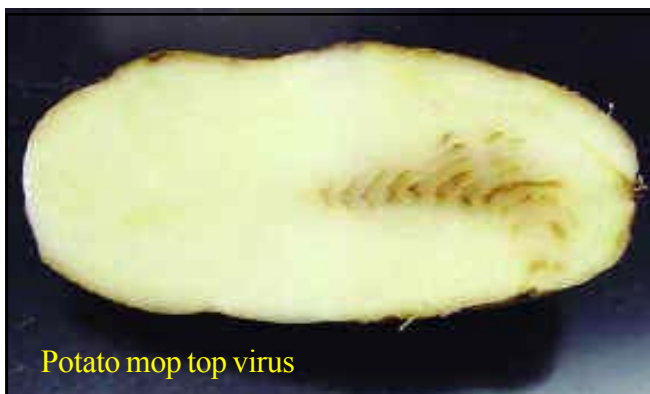
ready for harvest. Scouting for alfalfa weevil should begin once 300 DD (48°F) have accumulated and continue until new growth of the second crop is established. Beyond the second crop, the alfalfa weevil is seldom a problem.

**Potato leafhopper** – Because potato leafhopper is a migratory insect, the damage potential can vary dramatically from year to year. If we experience a heavy influx of migranst in mid- to late May, much of the state’s alfalfa acreage could be at risk. The combination of low soil moisture due to low amounts of winter precipitation and intense leafhopper feeding activity could lead to severe damage, especially in newly-seeded alfalfa.

**Pea aphid** – Overwintered eggs will begin hatching in the weeks ahead. As soon as the weather permits, pest survey staff will begin monitoring activity in alfalfa fields. Pea aphids colonize alfalfa, but they are not considered an economically important pest in this forage crop. Still, monitoring pea aphid activity in alfalfa fields is necessary to determine when populations begin migrating to pea fields, where heavy populations can cause extensive damage. Early-season pea aphid surveys are directed at determining when the first aphids appear in alfalfa, and when the winged forms begin appearing. Later on it will be important to detect the first aphids in peas and the rate of population build-up.



Pea Aphid



Potato mop top virus



**POTATOES**

**Potato Mop Top Virus** – A find of potato mop top virus (PMTV) last August in Maine prompted the USDA to require states to test seed potato lots or face a potential quarantine. PMTV causes tuber discoloration (called “spraing”), rust-colored arcs or flecks in the interior tissue of potatoes. (Spraing symptoms may also be caused by tobacco rattle virus, a nematode-vectored virus also not known to be present in Wisconsin.) Symptoms tend to develop in storage. Quality loss is the primary damage caused by PMTV, though the disease may have export significance.

PMTV is noted for being the first virus demonstrated to be vectored by a fungus-like organism pathogenic on potatoes in its own right, *Spongospora subterranea* f. sp. *subterranea*. The virus was only identified in 1966, though powdery scab (the disease caused by *S. subterranea*) has been known since 1841. Because of the relatively low level of virus in potatoes and the fact that the virus can be eliminated from potatoes over several generations in the absence of the vector, it has been postulated that PMTV is really a virus of the fungus, and only incidentally a potato pathogen.

DATCP has no record of powdery scab occurring in Wisconsin, and preliminary survey efforts last fall did not detect the disease. Wisconsin potato graders and shipping point inspectors were enlisted to watch for symptoms of powdery scab, though it can be difficult to differentiate powdery and common scab. A number of samples were submitted to the Plant Industry Bureau Lab for testing, but all proved to be common scab. The Department plans to conduct a more extensive powdery scab survey this coming growing season.

With assistance from the Wisconsin Seed Potato Certification Program and the seed potato growers, the DATCP Plant Industry Lab tested tubers from every lot of certified seed potatoes in the state. A total of 3,242 tubers were tested from 579 seed lots. Tubers were tested for the presence of the

virus using ELISA, an immunological laboratory method. The Federal government, through the Cooperative Agricultural Pest Survey (CAPS) program, supplied funding to support the testing.

Seventeen states with seed potato certification systems participated in the survey. Of the seventeen, only Maine had positive finds. A companion survey was undertaken by Canadian seed potato producing provinces under the auspices of the Canadian Food Inspection Service, but the Canadians have declined to release the results of their survey.

**SOYBEANS**

**Bean leaf beetle** - Nearly all soybean fields were affected to some degree by these voracious defoliators last summer. The combination of mild winter temperatures and earlier planting dates brought about the highest bean leaf beetle numbers in recent history. A review of 2002-2003 winter temperatures indicates that this winter was not favorable to the survival of Wisconsin’s overwintering bean leaf beetle population. We cannot know for certain at this time, but freezing temperatures and little snowfall may have reduced beetle numbers to manageable levels.

A predictive model developed at Iowa State University suggests that winter mortality rates were moderate to high statewide. Winter mortality rates were calculated by taking the daily average temperature (°F), subtracting 32, and accumulating only those temperatures that are negative throughout winter (October through April). The figure obtained is called the accumulated daily average subfreezing temperature. For example, in Milwaukee in November of 2002, after each daily average temperature minus 32, negative temperatures were obtained on 2 days; one was -4, and the other was -6. Thus the accumulated daily average subfreezing temperature for November was -10. We reviewed temperatures from sites spanning from Prairie du Chien to Rhinelander. Results are listed in the table below.

**Japanese beetle** – Once confined to the far southeastern corner of the state, this pest’s range now extends into Eau Claire Co. in the west central region, and trap catches have been documented as far north as Ashland Co. As Japanese beetle prevalence increases and populations become established across the state, we can expect beetles to move into field crops. In some parts of the state this is already the case. Last summer, Japanese beetles were observed defoliating several Dodge Co. soybean fields.

No threshold based on the number of Japanese beetles per unit area is currently available. To determine if the extent of Japanese beetle feeding in soybean is economically important, surveyors should estimate the percent of leaf defoliation. In corn, the economic threshold for Japanese beetles is related to the number of beetles per ear, the length

**Figure 1. Estimated winter mortality of bean leaf beetle at WI sites.**

	<b>Accumulated Daily Average Subfreezing Temp. (Oct-March)</b>	<b>Est. % Beetle Mortality</b>
Boscobel	-1279	<b>80-85</b>
Green Bay	-1385	<b>70-75</b>
LaCrosse	-1306	<b>85</b>
Madison	-1183	<b>75-80</b>
Medford	-1797	<b>95-100</b>
Milwaukee	-937	<b>65</b>
Prairie du Chien	-1263	<b>80-85</b>
Rhinelander	-2177	<b>95-100</b>
Sparta	-1503	<b>95-100</b>
Wausau	-1753	<b>95-100</b>

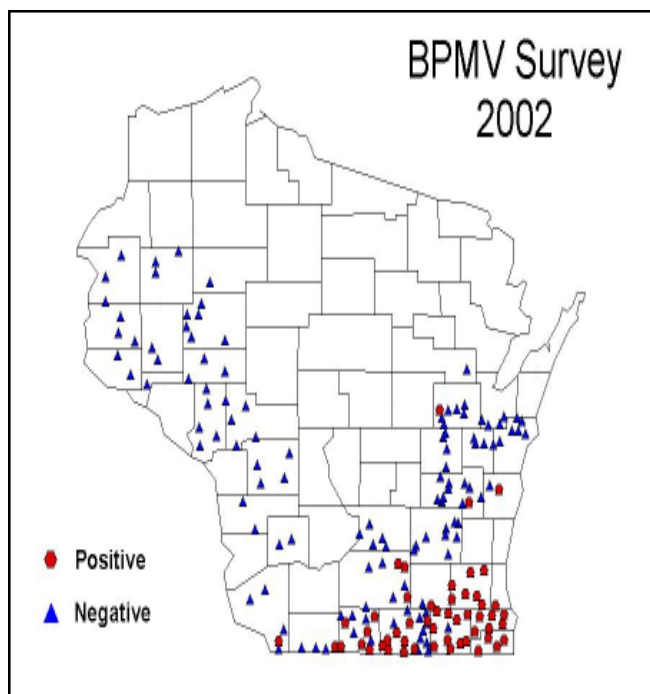


and maturity of silks and the extent of pollination that has taken place within a field. Reports and scouting recommendations for Japanese beetle will be provided in future issues of the Wisconsin Pest Bulletin as injury to field crops is observed.

**Bean pod mottle virus (BPMV)**— BPMV is a relatively new disease of soybeans in Wisconsin. This virus is vectored by the bean leaf beetle (*Certoma trifurcata*), an insect that is also enlarging its range in the state. BPMV can cause significant yield reductions, particularly when it occurs in a mixed infection with soybean mosaic virus. BPMV decreases pod formation, and reduces the size, weight, and number of seeds. Virus infection early in the growing season increases the yield loss. BPMV infection also predisposes the plant to infection by *Phomopsis*.

In August of 2002, DATCP survey personnel collected soybean leaves from 177 soybean fields distributed throughout the state. Samples were tested for BPMV using DAS ELISA (Agdia, Inc.) according to manufacturer’s instructions. Testing revealed that 53 of the 177 samples collected were positive for BPMV.

Positive fields were generally grouped in the southeast corner of the state. All fields tested in Kenosha, Racine and



Waukesha Cos. were positive. In Walworth, Rock and Green, the majority of fields were positive for the virus. Few fields showed evidence of BPMV north of a line drawn by 18/151 west of Madison and I-94 east of Madison, and no positive fields were detected along the river except for one field near Platteville in Grant Co., with fields sampled as far north as Balsam Lake in Polk Co. (see map)

For more information on BPMV, visit <http://planthealth.info/virus/bpmv.htm>

**APIARY**

**2002 Apiary survey-** Honeybee colonies showed the following pest and disease problems in 2002. Chalkbrood infections of brood remained at high levels in spring with 5.5% chalkbrood in 2001 compared to 5.6% in 2002. American foulbrood (AFB) increased from 2.3% in 2001 to 3.5% in 2002. Brood combs with symptoms of AFB were sent to the USDA-ARS Bee Disease Diagnosis Lab in Beltsville, Maryland for drug resistance testing. Two additional beekeeping operations tested positive for drug resistant AFB. Eighteen bee and brood samples were diagnosed at DATCP.

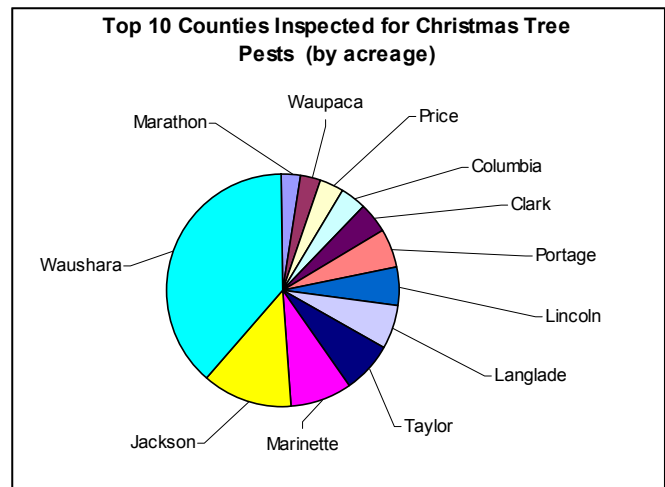
<b>Colonies testing positive for Varroa mite 1997-2002</b>						
	<b>Fall 1997</b>	<b>Fall 1998</b>	<b>Fall 1999</b>	<b>Fall 2000</b>	<b>Fall 2001</b>	<b>Fall 2002</b>
Total surveyed colonies incl. some migratory	133	161	199	257	283	424
Varroa mite infested colonies	73%	73%	60%	47%	27%	46%
Varroa mite >1% infestation*	45%	49%	43%	33%	18%	27%
Mortality of colonies by following spring	33%	29%	27%	23%	55%	12%

\*A mite count of 1% or less (less than 3 mites / 250 bees) is a desirable management level in fall.

**Varroa mite** (*Varroa destructor*) infestation levels that had been decreasing over the last two years are now rising again with 46% infested hives in 2002. CheckMite+™ treated colonies showed low average varroa infestation levels of 0.4% in 2002 which is an increase from less than 0.1% in 2001. The previous drop of varroa populations is probably due to the increased use of CheckMite+™ and effective control of fluvalinate resistant mite populations. The increase in varroa population in 2002 may indicate that resistance to CheckMite+™ is starting to show in Wisconsin. It is being reported from Florida where half of our migratory beekeepers overwinter.

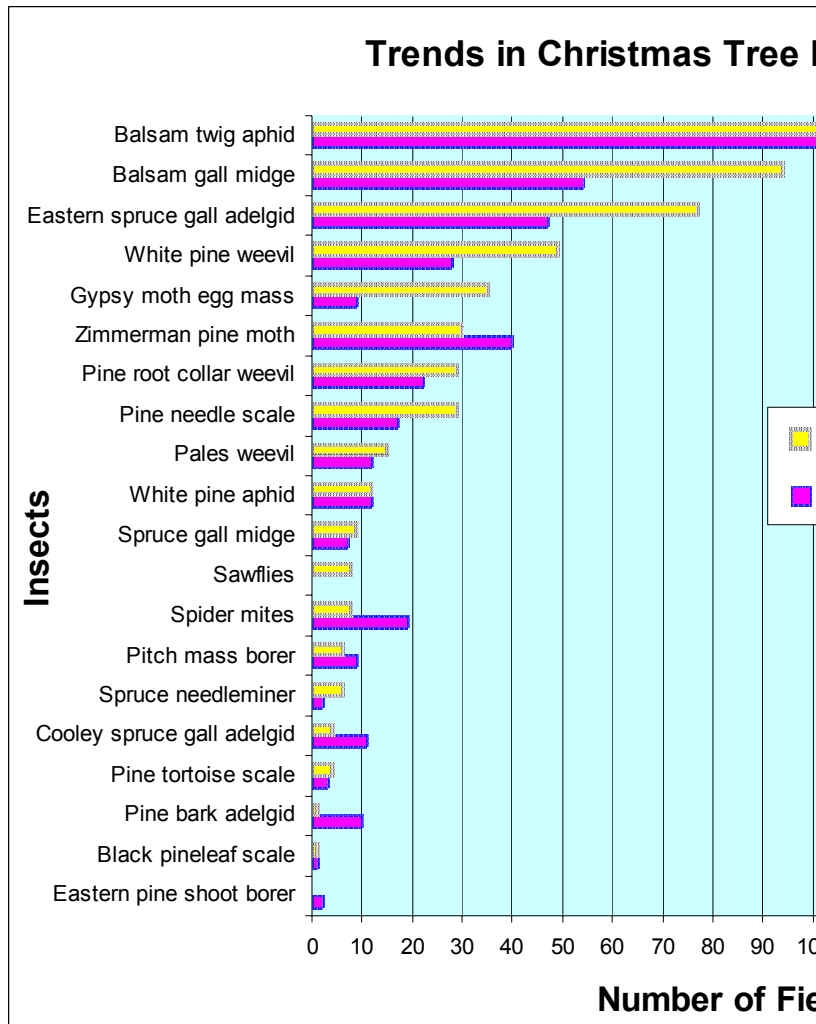
The current Section 18 emergency exemption for use of CheckMite+™ continues thru Feb 2004. Average winter mortality during 2001/2002 was extremely low with 12% after record high losses of 55% the previous winter.

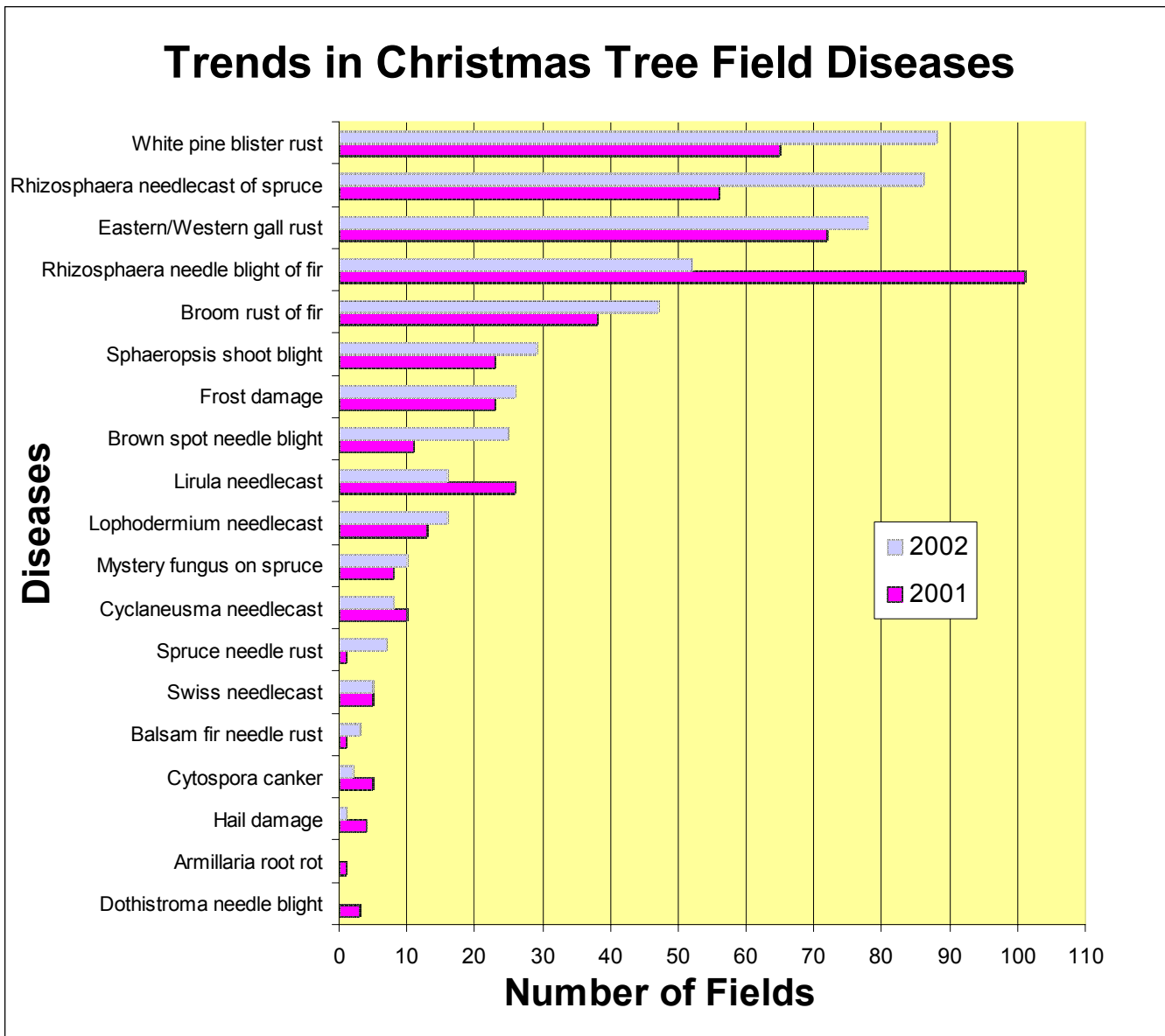
**Small hive beetles** are now documented in 14 counties. These were believed to be introductions by migratory colonies coming from Florida. Beetles have found their way to hives that permanently reside in Wisconsin but they tend to dwindle in numbers and are not expected to build up viable



populations in Wisconsin.

**Bees on the move-** Apiary inspectors surveyed and inspected 718 colonies in 2002. We certified 7,064 colonies for interstate shipment. Beekeepers moved bees to and/or from California, Florida, Hawaii, Louisiana, Mississippi, Minnesota and Texas





in 2002. A total of 56 out-of-state honeybee queen and package producers submitted Wisconsin honeybee import reports and inspection certificates as required by Wisconsin regulations. The list of “Certified Queen and Package Producers Shipping to Wisconsin” and fact sheets about honey bee control options can be downloaded from the department’s website (<http://datcp.state.wi.us/arm/environment/insects/apiary/>) or requested from the Apiary Program at 608-266-7132.

**FOREST, SHADE TREE, ORNAMENTALS AND TURF**

**Christmas Trees-** In Fall of 2002 DATCP inspectors visited 254 growers and inspected 497 Christmas tree fields. In all, we inspected 15,207 acres in 57 counties (see graph). We did find gypsy moth egg masses in 35 fields, but no pine shoot beetle damage was observed. In December, we inspected 103 Christmas tree sales lots in 28 counties. No regulated pests

or uncertified stock was found. Please refer to graphs to see how pests finds compared with the previous year. The next Wisconsin Pest Bulletin will have an article on gypsy moth management, targeted towards nursery and Christmas tree growers planning on shipping out of state.

**STATE/ FEDERAL PROGRAMS**

**Gypsy moth trapping program—** This year’s trapping program calls for the setting of approximately 28,000 traps statewide. Traps will be set at 1 per sq. mile. Delimitation (concentrated) trapping will be at 4 traps per sq. mi. and 9 traps per sq. mi. Most counties will be trapped at 1 trap per 2 sq. mi. while regulated counties in eastern Wisconsin will be trapped at 1 trap per 4 sq. mi. or 1 trap per 9 sq. mi. Forty-seven trappers will be hired to set the traps and they will begin setting traps right after Memorial Day. Trap setting takes approximately 4-5 weeks to complete. While most traps are set along roads in the right-of-way, some traps are set on



private property. We appreciate landowner cooperation in allowing our program to set traps on private property. Traps will be orange or green and be either the triangular delta trap or the larger milk carton trap. Traps are checked once over the summer and then taken down by the end of September. For more information on the GYPSY MOTH PROGRAM, please call our hotline at 1-800-642-MOTH or visit our website at: <http://datcp.state.wi.us/arm/environment/insects/gypsy-moth/>

**Gypsy moth spray program** — From June to October 2002, the Wisconsin Cooperative Gypsy Moth Program surveyed Wisconsin with 26,196 gypsy moth pheromone traps. A record number of male moths were caught totaling 626,851 moths. This total includes quarantine counties as well as “Slow the Spread” counties. The fall egg mass survey of 231 sites covering 960 acres within 29 counties revealed 48 positive sites and 183 negative sites. The purpose of both surveys was to assess the need for treatment in 2003. Specifically, our goal is to eradicate reproducing gypsy moth populations located west of the “Slow the Spread” (STS) Action Zone, slow the spread and buildup of populations that are located inside the STS Action Zone in Wisconsin, and reduce populations in the suppression zone. A total of 331,022 acres are proposed for treatment in 2003. Currently, 14 sites are recommended for mating disruption treatment totaling 270,846 acres, 30 sites recommended for treat-



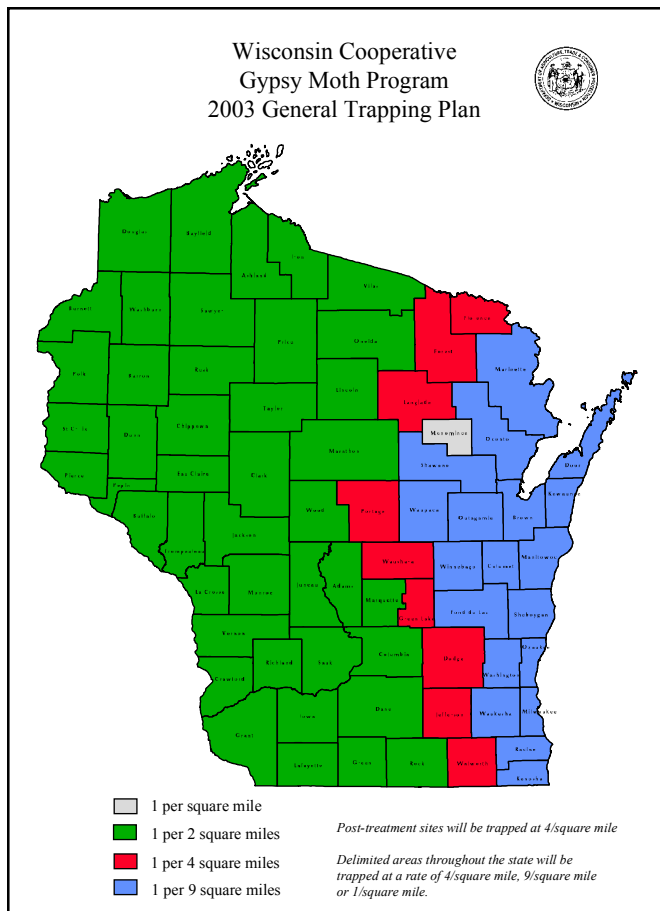
ment with *Bacillus thuringiensis* subsp. *kurstaki* (Btk) totaling 52,375 acres and 3 sites recommended for treatment with nucleopolyhedrosis virus (NPV) totaling 7,801 acres.

**FRUIT**

**Blueberry maggot** — The blueberry maggot, *Rhagoletis mendax* Curran, is not known to occur in Wisconsin, and has never been detected here. It is a pest of export significance, warranting detection survey measures. The larva feeds on berries causing them to shrivel and become destroyed. Both California and Canada have concerns that blueberry maggot occurs in Wisconsin’s cranberry bogs and wild blueberry bushes.

During the 2002 survey, yellow sticky traps baited with ammonium acetate crystals were set above blueberry bushes. Traps were set in a V-shape, with the point of the V facing downward, toward the bushes. A total of 23 traps were set in seven different counties. No blueberry maggots were found in any of these traps. These counties include Brown, Forest, Marathon, Marinette, Milwaukee, Oneida, and Richland. This was the third year of trapping for blueberry maggot. Trapping will continue this year in selected counties.

**Apple scab spore maturity modeling** – Again this spring, we will be working with cooperator orchards throughout the state to estimate *Venturia inaequalis* ascospore maturity. *Venturia inaequalis* is the causal agent of apple scab. Ascospores (often called the primary spore stage by orchardists) overwinter in infected leaves from the previous year. Once current-year leaves are infected, the fungus produces another spore type (conidia) in new lesions, causing what are considered secondary infections. Ascospores require warm weather in the spring to fully mature, a mechanism that facilitates spore release when susceptible apple tissue is available. Prior to the beginning of spore maturity, there is little threat of infection. If adequate control measures are applied during the period of ascospore





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maturation, few new lesions will form and the threat of secondary infection is greatly reduced.

Using temperature data collected by cooperators, the mathematical model will estimate the percent of ascospores that have matured and are available for release. The estimates are meant to be a guide for apple growers to identify the primary scab season; mezo- and micro-climate influences will change the season slightly for each orchard.

This year, the maturity estimates will be at a new web address—<http://datcp.state.wi.us/arm/agriculture/crops/applescab/applescab.html>

Estimates will be posted on a daily basis beginning once the MacIntoshes in the warmest cooperating orchard reach greentip.

#### QUOTE OF THE WEEK

Every year, back comes Spring, with nasty little birds yapping their fool heads off and the ground all mucked up with plants.

~Dorothy Parker (1893-1967)

#### WEBSITE OF THE WEEK

Web site of the week: Wisconsin Phenological Society  
<http://www.naturenet.com/alnc/wps/>

In Spring, a young person's fancy turns to...phenology. Phenology is the study of the "...development of plants and animals as affected by climate and weather at a certain geographical location." Information on the use of historical records of indicators and correlations (the blooming of Spirea, planting corn when oak leaves are the size of squirrel's ears) are gathered here. The site includes an outstanding "Manual for Phenological Observers". Join the Society, watch your lilacs, report your findings, become part of a worldwide network.