COOPERATIVE PEST SURVEY BULLETIN

State of Wisconsin
Department of Agriculture
Trade & Consumer Protection

Agricultural Resource Management

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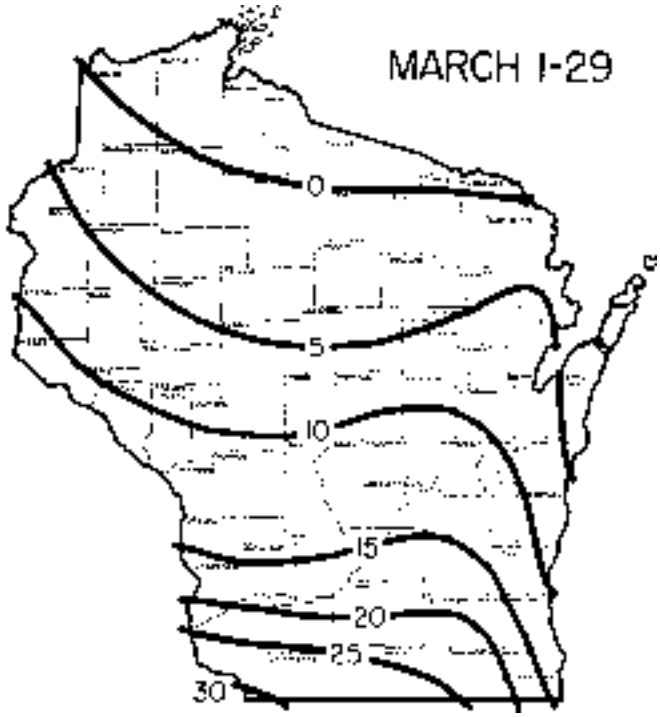
WEATHER AND PESTS

The first Pest Survey Bulletin of the real millenium! As usual there will be some changes, mostly minor, to the layout of the Bulletin in the coming issues. The first weekly Bulletin will be published April 27. The website address for the Bulletin will be changing in the future and we'll keep you posted as to the new address when we know it.

New pests to look for: **Potato wart (ALERTS), Daylily rust (ORNAMENTALS) and Flat scarlet mite (FRUIT).**



Historical Average Growing Degree-Days Accumulated Since March 1. (Wisconsin Agricultural Statistics Service)

ALERTS

Apple Trapping - To catch the earliest emerging adults, apple insect cooperators should place **spotted tentiform leafminer** and **redbanded leafroller** pheromone traps during the first week in April. The first weekly Pest Survey Bulletin of the season is scheduled for April 27. Be sure to send postcards enough in advance to ensure trapping results arrive on time.

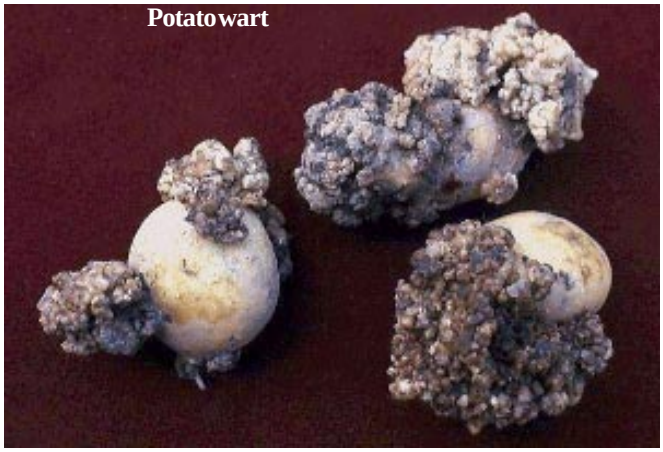
Welcome to our newest apple insect trapping cooperators at Devon Orchard, Ela Orchard, and Fieldhouse Fruit Farm. Good luck with your first season trapping with us!

Potato wart - A fungal disease of potatoes known as **potato wart** has appeared on Prince Edward Island, Canada. Its presence was confirmed on October 24, 2000. This disease is not known to occur in the United States. The North American distribution of this fungal disease of potatoes was previously restricted to Newfoundland.

Potato wart disease is caused by the soil borne fungus *Synchytrium endobioticum*, whose spores have been known to remain viable for up to 40 years. This disease produces unsightly growths on potato tubers (see photo), rendering them unmarketable. The primary host of **potato wart** is potato (*Solanum tuberosum*) and the secondary host is tomato (*Lycopersicon esculentum*), while its wild host is nightshade (*Solanum spp*.).

Symptoms include the development of warty outgrowths or tumorous galls at the base of the stem. Aboveground galls are green to brown, becoming black at maturity and later decaying. Occasionally, galls form on the upper stem, leaf, or flower. Below ground galls appear at stem bases, stolon tips, and tuber eyes. Tubers may be disfigured or completely replaced by galls. Galls under the soil are white to brown, becoming black upon decay. Roots are not known to be attacked.

APHIS, a regulatory branch of the USDA, has presented pest mitigation conditions to Canada for the movement of seed and table stock potatoes from Prince Edward Island to the United States.



Multi-colored Asian lady beetle, *Harmonia axyridis* - In recent years the multi-colored Asian lady beetle, *Harmonia axyridis*, has become a nuisance in parts of Wisconsin and other states. The first specimens recovered in the US were collected in Louisiana during 1988. Since then, the beetle has increased its distribution to include all states east of the Mississippi. It has only been recorded in numbers in Wisconsin since 1994. It is not known exactly how it became established in the United States.

Lady beetles are usually considered beneficial insects, but this species can congregate by the thousands on the sides of buildings and if given the opportunity, will move inside. Its sheer numbers alone can make people feel uncomfortable, but other attributes also add to its nuisance status. When disturbed, the adults secrete a foul smelling, orangish liquid from between the joints on their legs. This substance is very distasteful to birds and other animals. It also stains light colored fabrics, carpets, walls and floor coverings. And this beetle bites. While no toxins are secreted when it bites it can cause allergic reactions in some people. But it is the massive numbers of adults congregating that have made this beneficial insect an enemy. The ladybird beetles are congregating on homes in search of overwintering sites. They usually select the west or southwest side of buildings for initial congregation sites, but many leave on their own by nightfall. It is likely these beetles will move into leaf litter, underneath boards or logs, or other protected areas after the first frost.

What is this thing and where did it come from? These oval, convex, 1/3 inch beetles are pale orange in color with 19 black spots on the wing covers. The 19 spots are arranged as a row of five spots, followed by two rows of six spots, and a fourth row of two spots. Some of these beetles are either without these spots or may only have traces of 4 to 6 spots on the wing covers. In Asia, this beetle occurs in at least 100 different color forms including black forms with orange spots.

There are many conspiracy theories floating around out there as to its origin and purpose, and some have a grain of truth to them, so lets set the record straight. A good deal of information on this insect's importation and eventual release can be found at the USDA's Agricultural Research Service website, *http://www.ars-grin.gov/cgi-bin/nigrp/robo*. This is the home of the "Releases of Beneficial Organisms in the United States and Territories", or ROBO for short. Here you can find information on where these insects were collected overseas, where they were shipped to in the US, and a whole host of other information on their subsequent distribution and release.

Many members in the beetle family Coccinellidae, which contains lady beetles, are predators of aphids, scale insects and other small, slow moving insects and mites. In the case of the Multi-colored Asian lady beetle the target pests were various arboreal aphids, red pine scale, black pecan aphid, blackmargined aphid, white pine aphid, pear psylla and beech scale.

The first releases of *H. axyridis* in the United States occurred in 1916 and 1964-65 in California. These beetles were collected in Japan. Other beetles were collected from China, South Korea, and the USSR as well as Japan and shipped to the Beneficial Insects Research Laboratory in Newark, Delaware from 1980 through 1984. From this facility the lady beetles were maintained to be sure no parasites or pathogens were present in or on the

Multi-colored Asian Lady Beetle

beetles before their eventual dissemination in the field. The beetles were then distributed to states interested in releasing the beetles for control of various insect pests. Releases from 1980 through 1984 were made in the states of: Connecticut, Delaware, Georgia, Maine, Mississippi and Washington state. **No state or federal sponsored releases have been made in Wisconsin.**

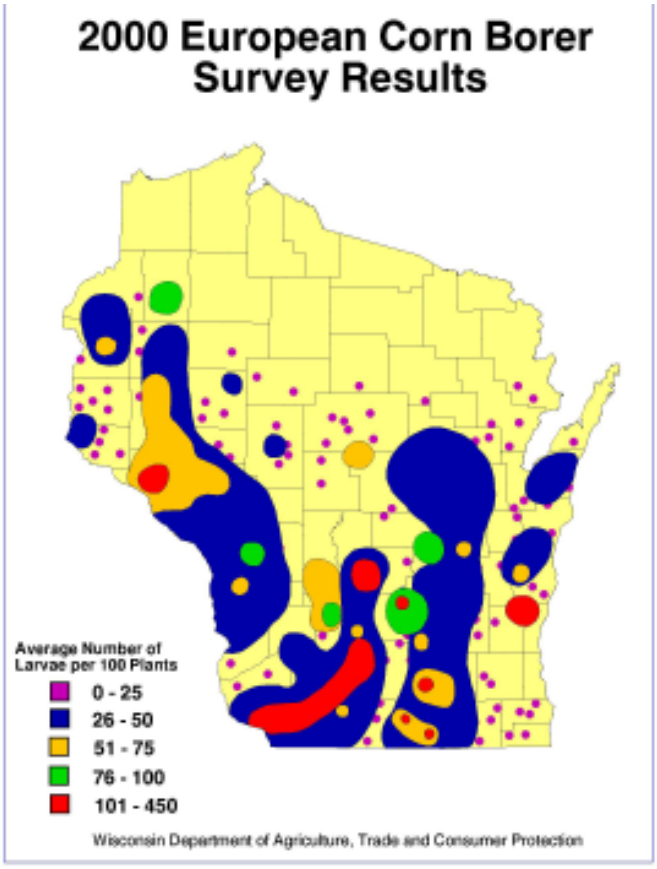
Prevention is the key to keeping this ladybird beetle from getting into homes. Make certain that cracks along windows and doors are tight fitting . Ventilation openings in attics should be screened or sealed as appropriate..One of the best ways to limit unwanted intrusions by insects is to deny them entry — a procedure known as pest proofing. Many pests seek refuge in homes and other buildings in response to changes in weather, such as extended periods of rain or drought, or the onset of cooler temperatures in autumn. Taking steps to block their entry before they end up inside can greatly reduce the chances of future sightings. Equipment and materials mentioned can be purchased at most home improvement or hardware stores.

1. Install door sweeps or thresholds at the base of all exterior entry doors. While lying on the floor, check for light filtering under doors. Gaps of 1/16 inch or less will permit entry . Apply caulk (see #3 below) along bottom outside edge and sides of door thresholds to exclude ants and other small insects. Gaps under sliding glass doors can be sealed by lining the bottom track with 1/2 to 3/4 inch-wide foam weatherstripping. Repair gaps and tears in window and door screens
2. Seal utility openings where pipes and wires enter the foundation and siding around outdoor faucets, gas meters, clothes dryer vents, and telephone/cable TV wires. These are common entry points for such pests as rodents, ants, spiders and yellowjackets. Holes can be plugged with caulk, cement, urethane expandable foam, steel wool, copper mesh (Stuffit), or other suitable sealant.
3. Caulk cracks around windows, doors, fascia boards, etc. Use a good quality silicone or acrylic latex caulk. Although somewhat less flexible than pure silicone, latex-type caulks clean up easily with water and can be painted. Caulks that dry clear are often easier to use than pigmented caulks since they don't show mistakes.
4. If the lady beetles cannot be built out there are a number of sprays that can be applied to the outside of the structure during mid October to kill the beetles before they get in. The most effective sprays are various synthetic pyrethroids such as permethrin, cyfluthrin, deltamethrin and lamda- cyhalothrin. Concentrate along doors, windows and the south and west sides of the structure. You may wish to hire a professional pest control company for application. When all else fails, a vacuum cleaner or broom is often the best response once the beetles have come indoors. (**UWEX in part**)

CORN

European Corn Borer - In our annual September survey, we determined the number of larvae that may survive the winter. Last fall we surveyed 220 fields in the southern two-thirds of Wisconsin. We calculated the average number of larvae per 100 plants for each field surveyed. The number of fields surveyed per county was determined by the current corn acreage. The average number of larvae per field ranged from zero in 9 of the 60 counties surveyed, to 450 in Buffalo Co. The 2000 statewide average of 24 fifth-instar larvae per 100 plants was 20 percent lower than the 1999 average of 30. All regions but two were lower than in 1999. Compared with last year, the northwest and central regions harbored 42 and 27 percent more larvae, respectively.

In 58 years of European corn borer surveys, 44 years had higher overwintering populations than this year. The lowest was five in 1998 and the highest was 197 in 1995. This year's statewide overwintering population of 24 larvae per 100 plants is relatively low.



VEGETABLES

Cabbage maggot – **Cabbage maggots** attack cole crops. The adult is a fly about half the size of the housefly with

black stripes on its thorax. The pupa overwinters in the top layer of soil. About early May, adults emerge and lay eggs on the soil near the base of the host plants. Eggs hatch within a week and the larvae, or maggots, begin feeding on plant roots. They feed and tunnel in the roots for 3-4 weeks before pupating. Second-generation adults emerge in June.

Early season plantings are most susceptible to damage. Root tunneling opens pathways for diseases, and also stunts and may kill the plants. Protect plants with row covers to prevent egg laying near cole crops, or avoid planting cole crop plants at peak fly emergence. Following are a few methods used to determine when the most flies are present.

One option is to set 3 – 4 yellow dishpans of sudsy water at 100-foot intervals along the field edge, and count the flies in the dishpans about every 5 days. Keep a record of the number of flies caught to know when peak emergence is complete. Another method is to calculate degree-days. The base temperature for cabbage maggot is 43ºF. This means the daily average temperature must be at least 43ºF for the **cabbage maggot** to develop. Peak emergence of the first generation occurs at about 300 degree-days (base 43ºF).

Daily average temperature = (daily high temp. + daily low temp.) ÷ 2

Daily average temperature – base temperature = degree-day accumulation.

Begin degree-day calculations as soon as the ground has thawed. Add the daily degree-days together until 300 degree-days (base 43ºF) are reached. A max/min thermometer is useful for calculating degree-days.

Cool, moist weather favors survival and development of the **cabbage maggot**. This is why mid-June plantings are usually less likely to be as damaged than early planted crops.
To prevent serious crop damage in an early crop, set transplants out one week before peak emergence. Sow seeds three weeks before or one week after peak emergence.

Seedcorn maggot – The **seedcorn maggot** attacks seeds and seedlings of most vegetable crops. Adults emerge from mid-April to mid-May. The larvae weaken and stunt seedlings, and prevent germination. Cool, wet weather favors this insect. Peak emergence of the first generation occurs at about 300 degree-days (base 39ºF). Degree-day calculations begin when the ground is thawed. The dishpan monitoring method also works for the **seedcorn maggot**.

Avoid the seedcorn maggot by planting between generations. The second generation occurs about 3 – 4 weeks after the first peak flight or about 1000 degree-days (base 39ºF). Encourage faster germination by planting seed shallow in warm soil (50ºF).

Stewart's wilt - During the past two growing seasons, **Stewart's wilt** bacterial disease of corn (caused by *Pantoa stewartii*) has increased in both its severity and distribution in Wisconsin. **Stewart's wilt** disease is spread by an insect, the **corn flea beetle**, which has become more prevalent in recent years because mild winter temperatures have allowed greater **corn flea beetle** survival. In 1934 the Stevens-Boewe index was developed to give growers a rough idea of how prevalent **Stewart's wilt** was likely to be. This index consists of the sum of the average air temperatures for the previous December, January and February and roughly estimates the likelihood that **corn flea beetles** will survive the winter. An index of 100^{O}F and above predicts that **Stewart's wilt** is likely to be severe, 90 to 99 ^{O}F indicates moderate to severe, 81to 90^{O}F indicates light to moderate, and an index of less than 80^{O}F predicts little or no **Stewart's wilt**. For the months of December 1999, January and February of 2000, however, the highest index reading for Wisconsin was 79.9^{O}F. According to the temperature index, neither the insect nor the disease should have been present. Survey and inspections conducted in 2000 found that both **Stewart's wilt** and the **corn flea beetles** were widely distributed in the state.

The temperature index for the passing winter, i.e. December 2000, January and February of 2001 predicts little or no **Stewart's wilt** in most of Wisconsin (see Figure). The maximum cumulative temperature record was 67.9^{O}F at a site in Milwaukee Co. The cumulative mean temperatures for the nine districts in the state ranged from about 37 in the northwest to 59.7^{O}F in the southeast.

There is a strong possibility that this index underestimates the risk of **Stewart's wilt** particularly for the southern tier of counties in the state. The temperature index is calculated from the air temperature; but the **corn flea beetle** spends the winter in ditch banks and hedge

rows, sheltered from extreme temperatures by leaf litter, soil and snow cover. December, the coldest month of the past winter, was also the month with the heaviest snow cover. Consequently, air temperature may not reflect the actual temperatures that the beetles were exposed to. Another factor to consider is that laboratory analysis by DATCP on **corn flea beetle** samples in the fall of 2000 indicates that a high proportion of **corn flea beetles** were infected with the bacteria which causes **Stewart's wilt**. Of 109 samples collected from 44 counties, 48% were positive for the bacteria. Surviving **corn flea beetles** may be able to spread the disease for the next crop season.

Growers in areas that have experienced **Stewart's wilt** problems during the past two seasons should be alert to the possibility of infection this year. The first line of defense is to plant varieties that are resistant to the disease. The EPA has issued a Section 18 Permit for treatment of sweet corn seed in Idaho with Gaucho (imidacloprid). This insecticide has been shown to be effective against **corn flea beetle** in experimental tests. Treatment of seed in Wisconsin is not permitted but recommendations on control are available from UW Extension.

Researchers at Iowa and Michigan State Universities have initiated a research project to develop better tools to predict, detect and control **corn flea beetle** and **Stewart's wilt** disease. We hope, in the future, to have a better temperature index, monitoring schemes, and control strategies. Until then, growers should be considering preventative measures, especially those in areas that have experienced **Stewart's wilt** problems in the past. (Temperature data courtesy of Mr. Lyle Anderson, State Climatologist, Madison.)

SOYBEANS

SOYBEAN CYST NEMATODE – No new counties were added to the list of Wisconsin counties known to be infested with **soybean cyst nematode**. Several hundred soil samples were collected in Iowa, Lafayette, Green and Wood Cos.; no SCN cysts were found.

APIARY

Beekeepers reported an average winter colony loss of 39% at their regional meetings in the southern half of Wisconsin as of the first half of March. Last year losses were estimated at 23% at that time of year. Few beekeepers have checked their hives in northern Wisconsin yet. At the last regional meeting losses of 52% were expected.

Queen and Package Producers are reporting more nucs to be moved to Wisconsin this year.
Beekeepers take note: Introducing used brood frames or nucs is a major source for **American foulbrood (AFB), *Paenibacillus larvae***. Check used frames carefully for symptoms of **AFB**. If you are unsure about identifying symptoms yourself call the Apiary Program for help at the number below and sign up for the free spring survey.

Updated fact sheets about **Honeybee Control Treatments** in 2001 and **CheckMite+™ Bee Hive Pest Control Strips** for control of **Resistant Varroa Mite** and **Small Hive Beetle** are available from our web site at *http://datcp.state.wi.us/static/arm/pib/beepubs.htm*. We would also be happy to send you copies in the mail, just call the Apiary Program at (608) 224-4575.

GINSENG

2000 SUMMARY OF GARDEN SURVEY FOR PESTS AND DISEASES

Ginseng gardens are surveyed and inspected during the growing season. In 2000 we surveyed 255 acres of ginseng and ran 302 diagnostic tests of diseased ginseng plant materials at the Plant Industry Lab. The survey provides data on prevalence and severity of pests and diseases over the entire growing area. The following diseases were assessed for severity. In seedling gardens: **Tip-over, Damping-off** and **Mystery Seedling Disease**; in two, three or four year old gardens: **Alternaria Leaf** and **Stem Blight, Rhizoctonia Stem Blight, Botrytis Blight, Rusty Root, Phytophthora Root Rot, Rhizoctonia Crown Rot, Vascular Root Rot**. Field diagnoses were supported by laboratory analysis of samples taken during the survey. Individual diseases varied in their impact on plant stand counts and root growth.

Disease prevalence gives the percentage of gardens that are affected by a certain disease, showing how wide spread a problem is. It does not provide any information about the severity of a disease or production losses. In 2000 slightly more gardens were infected with **Alternaria Leaf Blight** and **Stem Blight** than in 1999. Less gardens showed infections with **Botrytis** or **Grey Mold.** More gardens suffered from **Rusty Root** and **Phytophthora Root Rot** in 2000.

Estimated Stand Loss Or Plants Affected By Growth Reduction, Disease Severity.

Diseases	**1997**	**1998**	**1999**	**2000**
Mystery Seedling Disease	18%	2%	7%	8%
Tip Over	11%	1%	0.2%	0.1%
Damping Off	8%	<0.1%	0.8%	3%
Alternaria Stem Blight	5%	1%	6%	5%
Botrytis Blight	1%	1%	1%	0.3%
Rhizoctonia Stem Blight	<0.1%	<0.1%	<0.1%	0.8%
Rusty Root	6%	9%	5%	12%
Phytophthora Root Rot	1%	2%	1%	8%
Rhizoctonia Crown Rot	0.6%	0.6%	0.3%	0.1%
Vascular Root Rot	0.2%	0.09%	0.07%	0.003%

Night temperatures in the twenties during early May of 2000 caused some seedling population losses in 18 % of seedling gardens. Thirteen percent of gardens with older plants showed some symptoms of frost injury to foliage that generally did not affect survival of the plants.

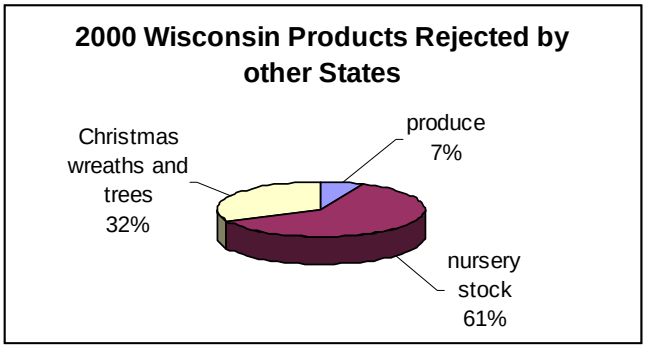
High precipitation and subsequent high soil moisture caused problems for the third year in a row in the central part of the state. **Rusty Root Rot** of two, three and four year old plants, increased from 5% in 1999 to 12% in 2000. **Phytophthora Root Rot** increase from 1% in 1999 to 8% in 2000.

All diseases together damaged or killed an estimated 11% of seedlings in 2000 compared to 7.9% in 1999 and 2.4% in 1998. Stand losses and growth reduction for older ginseng plants increased to 26% in 2000 compared to 12% in 1999 and 13% in 1998.

Ginseng growers who would like to participate in the free **GINSENG GARDEN SURVEY 2001** should contact Anette Phibbs at (608) 224-4575.

FOREST, SHADE TREE, ORNAMENTALS AND TURF

Rejection Notices - From time to time stock that has been shipped out of state by Wisconsin growers gets turned back or destroyed before it reaches its destination. Stock can be held up or destroyed because it violates other state laws, and is deemed an insect or disease threat. Each state has its own list of insects and diseases of concern. Departments of Agriculture in other states conduct inspections at post offices, UPS shipping points and even on roads entering the state. Part of our job at the WI Department of Agriculture is to track what products are being rejected and to work with Wisconsin growers to ensure their products are being shipped correctly.



In 2000 DATCP received 86 rejection notices, 5 from Nebraska and 81 from California. Fifty-one items were rejected because they were not clearly labeled

Disease Prevalence of Cultivated Ginseng

SEEDLING DISEASES		**1997**	**1998**	**1999**	**2000**
Mystery Seedling Disease	Root Rot	59%	46%	46%	41%
Tip-over	Stem Blight	44%	88%	85%	73%
Damping-off	Root Rot	22%	4%	46%	18%
Second, Third and Fourth Growing Year					
FOLIAR DISEASES					
Alternaria panax	Leaf Blight	52%	35%	70%	73%
					Stem
Blight	1%	13%	33%	38%	
Botrytis cinerea	Leaf Blight	59%	45%	51%	32%
Rhizoctonia solani	Stem Blight	4%	5%	7%	8%
Phytophthora cactorum	Leaf Blight	0%	2%	0%	2%
ROOT ROTS					
Rusty Root	Root Rot	42%	48%	49%	57%
Phytophthora cactorum	Root Rot	23%	21%	33%	38%
Rhizoctonia solani	Crown Rot	27%	26%	30%	11%
Vascular Disease	Root Rot	18%	10%	14%	5%

with origin of product and contents weren't noted on outside of package ("Markings" is the box checked on the rejection notice). Thirty-one items were rejected because they violated a specific quarantine (the most common is the Japanese beetle quarantine). Of these 31 items, not all actually violated a quarantine. In some cases, because the boxes weren't labeled with origin and contents, the inspector assumed the stock might have originated in from a county infested with **Japanese beetle** or **gypsy moth**. There were also several notices of rejection for soil stuck on farm equipment tires, and one for a U-Haul which contained ants. With recent scares of **hoof and mouth** in Europe, and several high profile agriculture insects and diseases in the U.S., you can be sure to see more agricultural pest enforcement in the future.

So, the moral of the story is that detailed labeling on the outside of packages will greatly facilitate shipping and inspection processes. Labels should have company, address, county of origin and a list of the products enclosed. A reminder that a county is not quarantined for a specific pest is a good idea too.

PEACH BARK BEETLE, *Phloeotribus liminaris* – This tiny bark beetle attacked mature black cherry in late summer after emerging from logging slash resulting from a September 1999 harvest. Many large-diameter tops produced ideal host material for the beetle population to build up. The late summer attacks on the residual cherry produced many conspicuous globules of gummy pitch. Dissection revealed large numbers of adult beetles that had bored into the live bark but did not reach the cambium. It is too early to know if they will successfully attack next spring.

A second infestation was found in a nearby woodlot where a single black cherry was attacked after a wind-storm had broken the tops out of several large-diameter black cherry trees.

This species is native to Wisconsin; it is a pest of peach orchards in southeastern U.S. The adult is tiny — 1 ½ to 2 millimeters long. It occasionally attacks black cherry that is under stress. It has not previously been reported as a pest of black cherry in Wisconsin and it is not known if this incident represents the beginning of a new pest problem. Utilization of the logging slash as much as possible would be a wise practice until we learn more about this bark beetle.

A pest alert is available on the DNR Forest Health Protection web page at: *http://www.dnr.state.wi.us/org/land/forestry/fh/insects/index.htm*. (**DNR**)

Daylily Rust - A rust fungus, *Puccinia spp*., was found on daylilies in a southeastern U.S. nursery for the first time this past summer. The rust has since spread to other varieties. Samples were initially identified as *Puccinia hemerocallidis*. Since then, there is some question as to the accurate classification of the rust species as hemerocallidis. Scientific experts are working on this question. This particular rust is very aggressive on the daylily variety "Pardon Me", on which the rust kills the foliage. Other daylily varieties have been infected, but not as severely as "Pardon Me".

Following inoculation of leaves, infection occurs only two to three days later. Not only does the rust have a short incubation period, but it also spreads fairly quickly in the nursery. Known infections have all been on the foliage. At this time, it is unclear whether or not there are infections on the tubers.

The perennial Patrinia is an alternate host of *P. hemerocallidis*. Six species of the perennial Patrinia are sold and grown across the U.S. as an ornamental. No infected Patrinia plants have been detected so far. The widespread presence of Patrinia could allow the fungus to complete its life cycle and could, therefore, increase the severity of its infection. Until now, *P. hemerocallidis* has only been reported from Asia. Its distribution includes tropical to temperate climates. Therefore, it could conceivably survive in a wide range of climates in the U.S.

In the U.S., the detected **daylily rust** has been confirmed in nurseries in Alabama, Florida, Georgia, and South Carolina. *P. hemerocallidis* has been reported on these varieties of daylilies: Pardon Me, Gertrude Condon, Starstruck, Stella D'Oro, Joan Senior, Colonel Scarborough, Crystal Tide, Imperial Guard, Double Buttercup, and Attribution. A USDA sponsored New Pest Advisory Group (NPAG) believes that the disease will be a serious pest of daylilies and may threaten the alternate host *Patrinia spp*. and the putative alternative host *Hosta spp*. Characteristics that make this a serious pest include: a short incubation period and rapid spread; the interstate trade of daylilies is very important and the plant is ubiquitous in nurseries and garden centers.

Biology: Little information has been found on the biology of *Puccinia hemerocallidis*. Different varieties of daylily have different susceptibilities to the rust. The spores can be spread by wind or by human movement of plants. This is a heteroecious rust (requiring two distinct host plants for the completion of the full life cycle). The perennial Patrinia is an alternate host of *P. hemerocallidis*. Patrinia allows sexual reproduction of the fungus. However, it does not appear that Patrinia is an obligate phase, as the urediospres produced in daylilies are viable, aggressive and quite virulent. Another reported host common in the landscape industry includes *Hosta spp*. Tests so far by the University of Georgia have not resulted in disease development on hostas. Further tests with hostas under varied environmental conditions will be conducted, the results of which should be available within the next couple of months. Hence,

the status of Hosta spp. as a host is not yet considered conclusive. According to one document in the literature, *P. hemerocallidis* may be synonymous with the hosta rust, P. hostae. Aphid feeding damage on leaves can also be confused with early rust infection, as the symptoms are very similar. More information is needed on the biology of this rust species. No information has been found on the pest status or control in Asia. All daylilies (Heterocallis) are native to Asia.

Distribution: Until now, *P. hemerocallidis* has only been reported from Asia. Its distribution includes tropical to temperate climates. Therefore, it could conceivably survive in a wide range of climates in the U.S.
Control: Fungicidal treatment of plant materials is considered a viable option for control. The University of Georgia will be testing different fungicide treatments. Fungicides to be tested include: Systhane, Strike and Banner Maxx (all systemic), Heritage (Systemic), Daconil (protectant/contact), Dithane (protectant/contact), and Contrast (systemic), and combinations of these. Most broad spectrum contact and systemic fungicides are expected to be effective against this rust disease. Both contacts and systemics may be useful in combination in containing or eradicating the disease. Confirmation of effectiveness is necessary, however. (**National Plant Board)**

STATE/FEDERAL PROGRAMS

Gypsy Moth Program - We will be hiring 52 trappers and 10 lead workers to set approximately 30,000 traps statewide. The eastern third of the state will be trapped at 1 trap per 4 sq. mi. with milk carton traps. The rest of the state will be trapped at 1 trap per 2 sq. mi. except for Columbia and Sauk Co. which will be trapped at 1 trap per sq. mi. There are about 100 delimitation sites in the central third of the state which will be trapped at 4 or 9 traps per sq. mile. Milk carton and delta traps will be used at delimitation sites.

Trappers will begin setting traps around Memorial Day after getting two days of trapper and GPS training. Trap setting should take 4-5 weeks to complete. Land owner cooperation in giving permission to set traps on private land is appreciated.

GYPSY MOTH TREATMENT PROGRAM - The proposed 2001 treatment program includes treating 45 sites (58,997 acres) in 17 counties with Bacillus thurigiensis var. kurstaki (Btk). Seven sites (62,000 acres) in 4 counties will be treated with pheromone flakes. Here is the list of proposed treatments: Adams Co. 2 sites; Columbia Co. 10 sites; Dane Co. 7 sites; Grant Co. 3 sites; Iowa Co. 3 sites; Jackson Co. 1 site; Jefferson Co. 1 site; Lincoln Co. 1 site; Marathon Co. 1 site; Marquette Co. 3 sites; Portage Co. 2 sites; Richland Co. 1 site; Rock Co. 4 sites; Sauk Co. 5 sites; Vilas Co. 1 site; Waushara Co. 4 sites; and Wood Co. 3 sites. Maps showing the location of the treatment blocks can be seen at our website *http://datcp.state.wi.us/static/gypsymoth/* Click on 2001 Spray Sites.

Treatment with Btk should begin in mid-May while pheromone flake treatments will occur in late June. For more information on the **gypsy moth program** go to our website or call our hotline at 1-800-642-MOTH.

FRUIT

FLAT SCARLET MITE – The **flat scarlet mite,** *Cenopalpus pulcher*, a pest of apples, pears, apricots and other Rose family trees, has been detected in the United States for the first time. Known to occur in Africa, Asia and Europe, the mite was found in Oregon in 1990, but misidentified. By the time it had been correctly identified in November of 2000, it had become the "dominant" mite species in the orchard. Budwood and scionwood were shipped from the original orchard where the find was

made to Wisconsin during that decade. Survey efforts are underway to determine if the **flat scarlet mite** now occurs in Wisconsin.

There are a number of red mites that occur on trees. Some are valuable predators, while others can be considered pests. The **flat scarlet mite** is 0.32 mm long, scarlet red and significantly flattened. It may be distinguished from the **European red mite** by the absence of four rows of spines on its back. To report a suspected infestation of the flat scarlet mite, please call 1-(800)-462-2803.

Spotted Tentiform Leafminer - **Spotted tentiform leafminer** adults are tiny cream colored moths with brown bands. During peak flights thousands of these moths may litter pheromone traps in a less than a week's time. The adults, however, are not responsible for damage to apple trees. Instead it's the larvae, which mine inside apple leaves between the upper and lower leaf surfaces, that are the damaging stage. Initially mines are only

visible on the undersides of leaves, but as the larvae develop and increase in size, speckled, u-shaped mines become apparent on upper leaf surfaces. Heavy leaf mining leads to severe defoliation, and the various problems associated with it, such as reduced fruit and terminal growth, early leaf drop, and reduced fruit set the following season.

Pheromone trapping, combined with routine scouting is the best way to monitor **spotted tentiform leafminer** populations during the growing season. Growers using pheromone traps as monitoring tools should not use trap counts alone to decide whether treatment is necessary. The fluctuations in pheromone trap counts that occur from week to week are an indication of what's going on in the orchard as a whole. Knowing how to interpret these fluctuations tells growers when to begin scouting, and what developmental stage to scout for. **Spotted tentiform leafminer** pheromone trap catches indicate two things. First, the relative abundance of local populations, and second, when to begin sampling leaves for eggs and leaf mines. In turn, these variables, the number of eggs and leaf mine per leaf, form the basis for deciding whether spraying is warranted.

In Wisconsin there are three **spotted tentiform leafminer** flights each season. The earliest events growers should be aware of are adult emergence, egg laying and leaf mining. Adults begin emerging around green tip, and immediately start laying eggs. Eggs become visible on the undersides of leaves just after green tip. **Spotted tentiform leafminer** eggs are tiny, flat, elliptical and creamy yellow in color. You will probably need to use a

hand lens to see them. Beginning at the pink stage, check the undersides of the 2nd, 3rd and 4th leaves of the cluster for eggs (start counting leaves from the bottom of the bud). If an average of nine or more eggs per fruit cluster is observed, than treating for larvae at petal fall


Spotted Tentiform Leafminer

should be considered (Midwest Tree Fruit Management Handbook).

Following egg scouting, growers should be on the *gov.on.ca/OMAFRA/english/crops/facts/88-067.htm*

lookout for leaf mining. The earliest leaf mines appear about one week after the first peak adult flight. Begin scouting for early mines of first generation at petal fall.

Redbanded Leafroller – **Redbanded leafroller** has the potential to cause extensive damage to apples, but usually does not cause enough damage to warrant


Redbanded Leafroller

treatment. In many cases, redbanded leafroller populations are inadvertently controlled by sprays used to suppress other apple pests.

www.ento.vt.edu/Fruitfiles/rblr.html

Redbanded leafroller feeds on a wide variety of plants, including plums, grapes, peaches, vegetables, weeds, and ornamentals, but exhibits a preference for both the fruit and foliage of apples. Because of its generalist feeding habits, pheromone trapping alone is not sufficient for deciding whether spraying is necessary. Pheromone trap catches indicate when to begin monitoring for the larvae, which is commonly 10-12 days after the first adult catch in pheromone traps, or around petal fall.

Pheromone traps should be placed at least one week before adult flight begins. Moths begin emerging in early April, around green-tip and can be found until bloom. The first eggs of the season, found on the trunk and scaffold limbs, begin hatching at petal fall. Once the eggs hatch, larvae crawl along the trunk and limbs until they reach the leaves. Larvae feed on lower leaf surfaces, typically along the midrib or one of the larger veins. Developing **redbanded leafroller** larvae spin a silken case and roll or fold surrounding apple leaves for cover. The silken case expands as the larva grows. Unwrapping one of these rolled leaves will reveal a small, pale green to yellow-green larva. Monitor for larvae by examining the number of larvae per 100 expanding leaf terminals or fruit clusters. In Wisconsin, **redbanded leafroller** typically produces two broods, and possibly a partial third brood each season.

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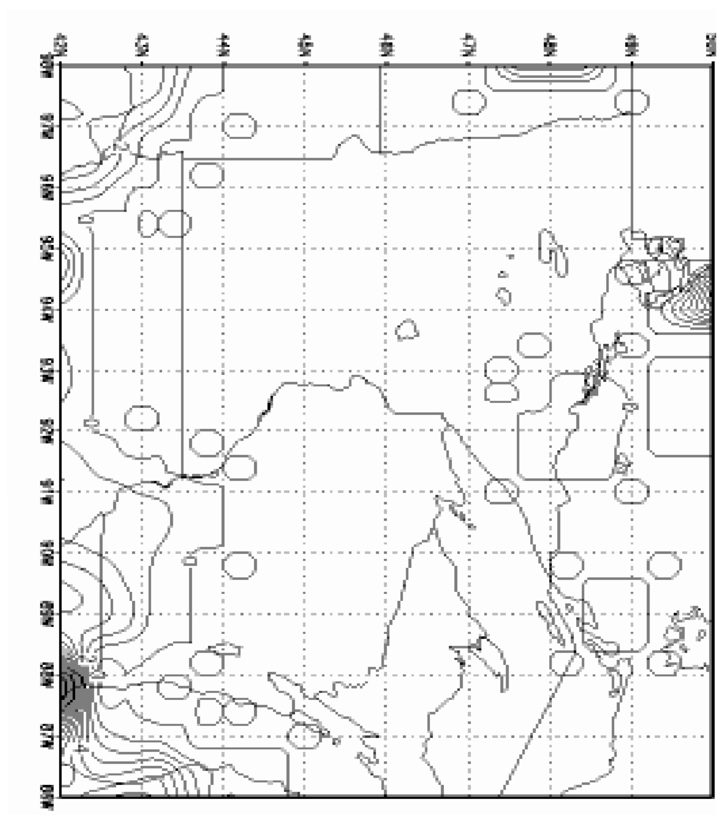

Degree Days (base 50°F) Jan 1 through Mar 28, 2001

Website of the Week
Each issue, we hope to highlight a website we believe our readers may find interesting. (Of course, notice is provided for information only—no endorsement is meant or implied.) This week's site:

National Invasive Species Information System
http://www.invasivespecies.gov/
A comprehensive site of government efforts directed at invasive species. Thorough coverage of all aspects of invasive species, including an excellent education component.