



UTAH PESTS News

Utah Plant Pest Diagnostic Laboratory and USU Extension

Vol. II, Fall 2008

New Threat to Walnuts: Walnut Twig Beetle and Thousand Cankers Disease

What's Inside

Iris Yellow Spot Virus Survey in UT

Bacterial Canker on Peach

News:

New Web Site

Beneficial Bugs Book

Arachnids, Wasps, Bees

Fall Lawn Tasks

Grower Profile

National IPM News

News Highlights

NEW UTAH PESTS

FACT SHEETS

The following can be found on our Web site:

Beneficials: Lacewings and Antlions

Fire Blight

Grasshoppers

Pseudoscorpions

Red Fire Bug

LOOK FOR IPM ADVISORY SURVEY SOON

The IPM Advisory service offered by the *UTAH PESTS* group is supported by federal funds. Your responses from an upcoming September survey will assist us in evaluating this service, and in allowing us to receive continued funding.

www.utahpests.usu.edu

Walnut trees are dying in Utah and Dr. C. Reed Funk, retired Rutgers University plant breeder, was among the first to notice. Dr. Funk started a non-profit organization called "Improving Perennial Plants for Food and Bioenergy" (IPPFB) with research field sites in Dayton, Idaho, and his hometown of Richmond, Utah. Walnuts, namely Persian, English, and black, are one of their primary research crops, and the organization now grows several thousand walnuts representing a worldwide progeny. In 2004, IPPFB noticed that several research walnuts were in decline or dying, some within 2 years. Dr. Funk also began to take notice of landscape trees in Richmond and northern Utah, and saw majestic specimens, some centuries old, dying before his eyes.

Some digging for answers on the Internet led him to articles about a mysterious walnut decline observed in Boulder, Colorado. There, Parks and Recreation Urban Forestry staff noticed a rapid decline and death of walnuts starting in 2003 and identified the walnut twig beetle (*Pityophthorus juglandis*) as a possible cause. Colorado State University Plant Pathologist, Ned Tisserat, observed that a pathogen was also involved, but had not yet identified it. Fearing a similar diagnosis, Dr. Funk sent samples to the city forester in Boulder in fall 2007, who in turn sent them to Tisserat.

Tisserat initially identified the fungus *Fusarium solani* forming long, vertical cankers on the dying



Two recently killed black walnuts to the left of a Persian walnut in the yard of Dr. Funk's childhood home in Richmond, UT.



Bark beetle galleries on the trunk of a walnut caused by walnut twig beetle.

Dr. Funk and assistant, Ken Turner, examining the health of a black walnut.

trees on Boulder. "This pathogen, however, is typically associated with trees already in decline, and we had not found it associated with the walnut twig beetle or the beetles' galleries," he said. In summer 2008, after months of investigation using the IPPFB sample and samples from Boulder, Tisserat consistently

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isolated a fungus from branch and twig cankers surrounding the beetle galleries, and from the beetle itself. He identified it to genus as a *Geosmithia* sp. Tisserat noted that “several *Geosmithia* species are known to be associated with bark beetles on hardwoods, but it has never been seen on *Juglans*, nor associated with walnut twig beetle.”

The complex (the beetle, *Geosmithia*, and *Fusarium solani*) that is killing walnuts has been named thousand cankers disease. “We’re calling it ‘thousand cankers’ because the number of cankers found within an individual tree is enormous,” says Tisserat. “Each canker is associated with an individual beetle attack. So it’s death by 1,000 cankers.” *Geosmithia* cankers expand rapidly vertically, often coalescing to one large canker. *Fusarium* cankers are much larger—they may extend from the ground to large scaffold limbs—and are only associated with trees in advanced stages of decline. Symptoms of the decline include yellowing and thinning of the upper crown, death of large limbs, and rapid foliage wilt followed by tree death.

The walnut twig beetle is native to North America, but was historically only associated with the native Arizona walnut (*Juglans major*) located in southwest U.S., and Chihuahua, Mexico. It is believed to have at least two generations. This tiny beetle overwinters as an adult in tree bark, emerges in spring, feeds on bark and wood, and lays eggs in a nuptial gallery. Bark beetle galleries can be found in small twigs, large limbs, and sometimes in the main trunks. Exit holes are almost too small to see with the naked eye.

The beetle’s 2003 identification from Boulder was the first known report in Colorado, but in Utah, the beetle was first recorded in 1988 from Provo by Brigham Young University staff. UPPDL also identified the beetle from Iron, Sanpete, and Cache counties starting in the mid-90s. We presume that the beetle now occurs in Utah wherever black walnuts grow.

Previous reports of black walnut deaths in the West have been attributed to drought stress, with the beetle as a secondary pest. Black walnut is native to eastern



Ned Tisserat, CSU

Geosmithia cankers associated with galleries.

U.S. and not adapted to the desert environment. However, the thousand cankers complex has been associated with trees on irrigated sites, over a wide area (CO, UT, ID, and southern CA—but not in English walnut production areas), and kills trees in a matter of 1 to 3 years, suggesting no relationship to environmental stress.

There are many questions about thousand cankers disease that Tisserat and CSU Entomologist Whitney Cranshaw plan to address, including the origin of this *Geosmithia* species, control options, the distribution and biology of the insect and the pathogen, resistance, and prevention of spread to native walnuts in the East, and to production farms. And IPPFB is finding that it must now shift focus on breeding walnuts for their nuts to finding specimens with resistance. “We have already seen some trees that are showing promise,” notes Dr. Funk. “The black walnuts seem to be the most susceptible, while the Persian and English walnuts are a bit more tolerant.”

As it stands now in Colorado, over 500 walnut trees have been killed by thousand cankers disease in Boulder, and none remain in Colorado Springs. In Utah, black walnuts are not widely planted, and a mortality estimate has not been determined.

Keep an eye on your walnut trees and report any sudden dieback or death to the UPPDL. Unfortunately, there are no identified controls; rapid detection and removal may be the only option to prevent spread.

-Marion Murray, IPM Project Leader

Iris Yellow Spot Virus Surveyed in Utah Onion Fields



Fig. 1. Straw-colored lesions of iris yellow spot virus on an onion leaf.

Iris Yellow Spot Virus (IYSV) is a new disease affecting onion crops worldwide. It was first observed in the western United States in the 1980s but was not described until 1998. It was found in a commercial onion field in Utah in 2000.

This summer, Kent Evans' lab and the UPPDL surveyed 15 fields throughout northern Utah for the presence of IYSV. In each field we noted disease severity ratings in 30 random locations, and collected an additional 30 random samples to test for the presence of the virus. The test (ELISA, or enzyme-linked immunosorbent assay) involves a color change; those samples that change color are positive for the virus. Early in the season, there were plants that were positive for the virus, but showed no visible symptoms on the leaves. Symptoms didn't become apparent in the field until early August. We will continue monitoring the fields until they are harvested.

Infection by the virus causes dry, straw-colored lesions on both leaves and scapes (Fig. 1). The lesions will usually appear on the margins of the youngest, fully expanded leaves or on swollen portions of the scape. Sometimes the center of lesions will be green (Fig. 2), or will have concentric rings of alternating green and straw-colored tissue. The number and size of lesions will increase and the lesions will become necrotic as the disease progresses. Large areas of foliage can become necrotic (Fig. 3), slowing plant development. Infection in seedlings can kill plants or severely stunt growth so that the field must be replanted or abandoned (which has not occurred in Utah). Large necrotic lesions that develop on scapes will cause the scapes to lodge (fall over). The highest incidence of symptomatic plants is usually found around the field margins.



Fig. 2. Iris yellow spot virus lesions sometimes have green centers.



Fig. 3. A leaf infected with iris yellow spot virus showing large areas of necrosis.

Little is known about the disease cycle of IYSV. It persists in areas where onion bulb crops, seed crops, or both are produced year-round. The virus can also persist in volunteer onions, infected onion transplants, ornamentals, and weed hosts without causing symptoms. IYSV is thought to be spread exclusively by onion thrips (*Thrips tabaci*), and a high population of this insect increases the risk of successfully transmitting IYSV in onion fields.

IYSV is a difficult disease to manage. Using clean transplants free of virus and thrips is important. Eliminating weeds, volunteer onions, or other alternate hosts will reduce the reservoir of IYSV and thrips. Uniform, dense plant populations can reduce the incidence of IYSV. Overhead irrigation seems to suppress thrips populations and decrease IYSV incidence and severity. Use management practices that reduce plant stress; stressed plants will have higher disease severity. Straw mulch can reduce thrips populations and increase moisture retention.

-Erin Frank, Plant Disease Diagnostician

Tip Dieback of Peaches Identified as Bacterial Canker

This spring, growers and USU Extension staff noticed a tip dieback, bud death, and flower blasting problem of peaches in various orchards. Certainly, spring frosts contributed to a portion of the problem, but the symptomology suggested that a pathogen was in play. Cultures of several specimens yielded the answer: a bacterium called *Pseudomonas syringae* pv. *syringae*, that causes bacterial canker. The disease is characterized by a complex interaction of plant host, pathogen, and environmental conditions that can make disease development difficult to predict.

Infections by the bacteria often start in the late fall just prior to winter, and symptoms appear the following spring. The bacteria persist in orchards, living as a non-pathogenic epiphyte on leaf surfaces of peaches and many other plants including most weeds. Late season rainfall spreads the bacteria from leaf surfaces to buds where the infections take place. Infections are inconspicuous in the fall and winter but become more obvious in the spring, with dead buds that often exhibit signs of gummosis. The bacterial pathogen can also infect blossoms at flowering if rainfall occurs. Infected flowers will die prematurely and symptoms of gummosis are often evident on dead or dying blossoms.

A bacterial infection can girdle the twig. Branch death caused by cankers usually spreads from the infection point to the tip (Figs. 1 and 2), but occasionally spreads downward. The disease does not cause death of the trees' roots, like the fire blight bacteria can on apples. The disease can affect crop yield and can weaken the host tree (although 2008 losses due to this disease have not been determined for Utah). Infected trees are predisposed to more infection or infection from other diseases such as coryneum (shothole blight), powdery mildew, or other diseases.

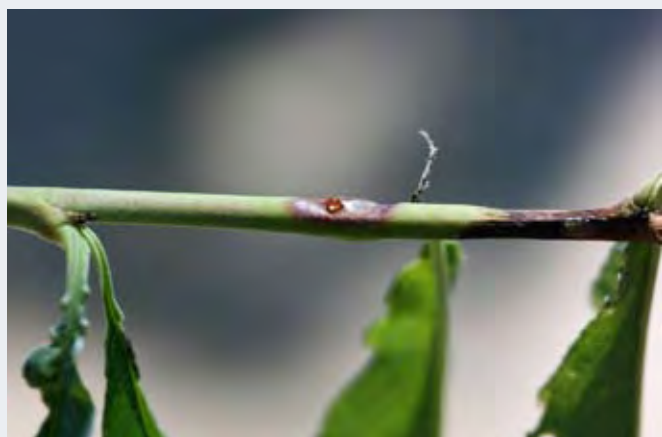


Fig. 1. Gummosis from bacterial canker infection.

Erin Frank, USU Extension

Management requires a combination of cultural and chemical methods. Bacterial canker is more serious in young plantings and in trees that are stressed by lack of water and poor nutrition, such as iron chlorosis, a common problem due to Utah's alkaline soils.

Dead wood should be removed by pruning in late summer. (Care should be taken to disinfect pruning tools between cuts using isopropyl alcohol, 10% bleach solutions, or spraying tools with a surface disinfectant containing at least 70% alcohol.)

Copper compounds, such as basic copper and/or copper sulfate, should be applied in the fall (two to three applications beginning at 10% leaf drop to just after full leaf drop) and early spring prior to bud break.

Isolates of the bacteria causing this disease have been found resistant to copper compounds in Michigan, California, and Oklahoma, and could potentially occur in Utah as well, although that has not been shown to date. We are presently isolating these pseudomonad bacteria, which are often fluorescent (Fig. 3), from infected peaches and will be testing them for resistance to copper compounds this fall.

-Kent Evans, Extension Plant Pathologist



Fig. 2. Canker margin; damage extends to the twig tip.

Erin Frank, USU Extension

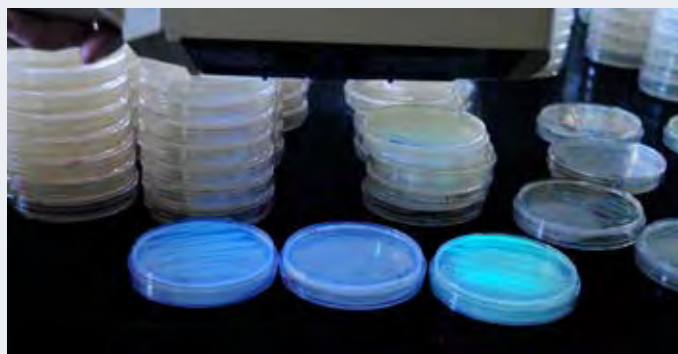


Fig. 3. *Pseudomonas* bacteria fluoresce under UV (black) lighting.

Utah TRAPs: A New Web Site for Calculating Degree Days

The Utah IPM program now offers an online tool for growers to manage their pest problems, produced through a partnership with the Utah Climate Center who funded the site's programming.

The tool, called Utah TRAPs (Timing Resource and Alert for Pests), is a degree day calculator, insect phenology, and management guide for agriculture and landscape locations in northern Utah. The ten locations currently included in the system are commercial orchard sites where USU-owned weather stations record a plethora of climatic data. They are collectively referred to as the "FGNet" system.



Users start at the TRAPs home page (climate.usu.edu/pest), and select a station on the click-able, zoom-able map. They next choose a pest from the drop-down menu. Users can request a general growing degree day sum (GDD50), or get customized degree days for: codling moth, greater peachtree borer, peach twig borer, San Jose scale, or western cherry fruit fly. Biofixes have been determined for appropriate insects, and appears as the default "start date" for the selected pest. Users can also enter their own biofix. The system calculates degree days up to the current date (default) or up to a date the user chooses.

The output provides:

- A five-day **degree day history** and four-day **degree day forecast**. The forecast is particularly useful for growers needing to know when to target a certain life stage.
- **Insect phenologies** (percent moth

flight and egg hatch, for example) for each date.

- **Management information**. If a matching management recommendation exists for any degree day value that appears in the table, it is highlighted in an adjacent table.

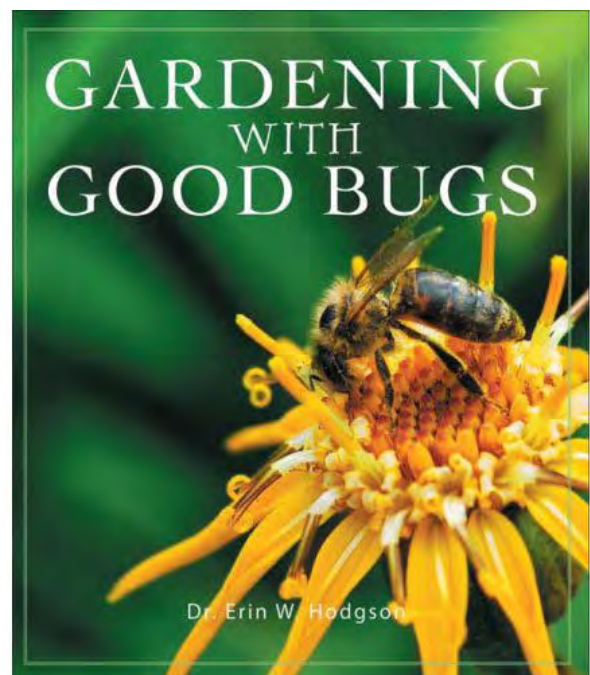
The Utah TRAPs Web site is evolving, and is actually part of a collection of "Plant Management Tools" (PMT) Web pages on the Climate Center site. Future additions to the PMT for next spring include: adding more weather station locations, a fire blight forecasting model, options for FGNet weather data downloads, a frost warning system, evapotranspiration information, and additional insect models covering vegetable, field crop, and landscape systems.

We welcome comments, suggestions, or questions of this new service to Marion Murray (marion.murray@usu.edu).

Gardening with Good Bugs

For all of you that are involved with the Master Gardening Program or have homeowners asking about insect identification in the garden, I may have a solution for you. Recently, I published a book for home gardeners about beneficial insects called **Gardening with Good Bugs** (Silverleaf Press, ISBN 1934393010). I talk about the basics of IPM for the homeowner and why we should try to incorporate biological control in gardens. The majority of the 128-page book covers common groups of beneficial insects, including beetles, lacewings, and wasps. Each section gives a brief review of the life cycle, size, and color description, and host range for common species. It also has many full-color photographs that supplement the text. I am often asked if such a book exists as I teach Master Gardener classes around the state. I hope you find this book useful, and encourage you all to have a few copies in your office as a reference publication. Books are available for under \$12 at amazon.com. Keep good bugs in your life!

-Erin Hodgson, Extension Entomologist



UPPDL Common Submissions: Arachnids, Wasps, and Bees

The end of August is a busy time at the UPPDL, mostly occupied by identifying hobo and non-hobo spiders. Hobo spiders (Fig. 1) will be wandering into homes from now until mid to late October. For more information on hobo spider biology and control options, please [read our fact sheet](#). For information concerning the identification of hobos, see our [pictorial identification key](#).



National Park Service

Fig. 1. *Hobo spider*

Hobo spiders aren't the only arachnid visitors you can expect to see this fall. Another spider common to Utah homes, the yellow sac spider (Miturgidae: *Cheiracanthium inclusum*), will also be moving inside as temperatures drop. While hobo spiders move into homes searching for mates, yellow sac spiders move inside to find food. As autumn progresses, cold temperatures will decrease the sac spider's food supply. In a warm house a spider can find insects all winter long, so get out those vacuums and start cleaning up potential spider food. Without food, spiders will leave your house and search elsewhere.



University of Nebraska-Lincoln Dept. of Entomology

Fig. 2. *Yellow sac spider*

Yellow sac spiders (Fig. 2) are medium-sized spiders (about the size of a nickel including the legs) and are yellow to yellow-green in appearance. They are most often seen in homes on walls, ceilings, and in the corners of rooms. As their name

suggests, they spin day-time retreats (usually in ceiling corners) that look like little white cocoons, or sacs. At night they leave the sac and begin searching for food. Because of their nocturnal habits, most bites are likely to occur while you are sleeping. A good way to reduce your chance of receiving a bite is to remove your bed skirt and move the bed 8 inches away from the wall.

While hobo spiders receive much recognition over their supposed necrotic bite, the bite of the yellow sac spider is also potentially necrotic, but to a lesser degree. It is believed that the majority of spider bites Utahns receive are actually from yellow sac spiders, not hobos. Most bite victims will notice redness and sometimes pain at the bite. Usually, the bite will just go away at this stage, but for those who are more susceptible to the spider's venom, a blister may develop followed by a small necrotic spot. To minimize potential health complications, infected bites should be treated by a medical doctor. If it is possible, you should collect the spider that bit you and submit it to the UPPDL for identification.

To control yellow sac spiders (and a lot of other common house-dwelling insects like boxelder bug) we recommend the following exclusion and sanitation techniques:

- remove spider webs, egg sacs, and harborage (clutter that provides hiding places)
- frequently clean inside closets, attics, basements, and other storage areas
- vacuum behind furniture, under baseboard heaters or radiators, in closets, and in other undisturbed areas
- use caulking to seal cracks or crevices in the foundation or where pipes enter the house
- install seals (weather stripping) around doors and windows that have large gaps
- repair broken screens or windows
- place sticky traps along baseboards or in other areas where spiders are seen

Recently in the news there has been a lot of hype concerning camel spiders that is not true. I would like to dispel the myths surrounding camel spiders (Fig. 3), which are also known as sandspiders, sunspiders, sunscorpions, windscor-



Warren Savory, Tree of Life Web Project

Fig. 3. *Adult male camel spider*

continued on next page

Common UPPDL Submissions, continued

pions, and solifugids. They are arachnids like true scorpions, ticks, mites, and spiders, but they are in a different order than spiders—Solifugae (and collectively referred to as solifugids). One of the major ways they differ from spiders is that they do not have venom glands. Solifugids are non-venomous! Even if they had venom glands, they do not have fangs or a stinger with which to deliver venom. Within the order Solifugae, there are two families containing about 120 species that occur in the United States: the Ammotrechidae and the Eremobatidae. To view pictures of these families [click here](#). Worldwide, there are 12 families containing about 1095 described species.

Most of us have seen the picture of the soldier holding two (seemingly) huge camel spiders with a pair of pliers (Fig. 4). That picture was taken to make those arachnids look huge. Incidentally, the largest Middle East solifugids (members of Solpugidae, a family within Solifugae) are about 2.5 inches in length, which is how big the camel spiders in that picture actually are! The largest solifugids occur in Africa, where they can reach up to 6 inches (including the legs).



Fig. 4. “False” photograph of camel spider. Because of the angle this photo was taken, the arachnids appear to be 5 to 7 times their actual size of about 2.5 inches.

Solifugids are common to arid regions of the southwest, including Utah. They are nocturnal and spend their days hiding beneath objects, or in burrows. They are predaceous, feeding on other insects and in some cases even small lizards! They look fierce because of their large chelicerae (mouthparts), which stick out far from their head. These are used for subduing and mashing/grinding insect prey. In the U.S., solifugids reach lengths of 1 to 1.5 inches; pretty small compared to the size of the solpugid in the “false” picture above (Fig 4). Solifugids should be considered beneficial predators. They are native to Utah and were here long before we were. Solifugids are considered beneficial hunters, and no chemical control is recommended. Next time you are camping in southern Utah, go out at night and search the ground below with a flashlight. You are likely to see many solifugids running around! For more information on solifugids and spiders (and their myths), [click here](#) for the Burke Museum (WA) Web site.

Another frequent submission to the UPPDL this summer, in addition to hundreds occurring in my back yard (over which I am ecstatic), were the solitary, ground-nesting bees and wasps. In particular we received numerous calls concerning ground-nesting *Bembix* wasps, and *Diadasia* bees.



Peter J. Bryant, University of California, Irvine

Fig. 5. Adult female sand wasp.

Wasps in the genus *Bembix* are also known as sand wasps (Fig. 5). As their name suggests they prefer to colonize sandy soils. These are non-aggressive wasps that live a solitary life (one wasp per hole), but usually colonize an area en-masse. These groups of solitary wasps are called aggregations, and can be intimidating at first. Sand wasps rarely sting, if at all. Coincidentally, males spend the night outside the nest, keeping guard. While the males are territorial, they do not have stingers, so they cannot sting. The males merely fly around, buzz, and try to intimidate you into backing off, which usually works for me! These wasps are, in a sense, both predatory and parasitic. Female sand wasps catch other insects like flies and grasshoppers, paralyze them by stinging, and then bring them back to their nest. Once in the nest, she lays an egg on the body of the paralyzed insect. The hatched larva feeds on the “provision” until it pupates and overwinters. Adult bees feed on nectar and are actually beneficial pollinators.

Diadasia bee species ([click here](#) for more photos) have a very similar life history to the sand wasps. One of the main differences, besides being bees instead of wasps, is that they provision their developing young with a ball of pollen. Their nests are also slightly different in construction. *Diadasia* species construct shallow burrows, usually topped off with turret-like protrusions made of mud. The burrows lead to one or several cells at the end of different branches within the burrow. Each cell at the end the burrow is lined with a secretion from the mother.

Because of sand wasps’ hunting and pollinating habits, and *Diadasia* species’ pollinating habit, both groups are considered beneficial. In general, control is not recommended. In some

cases, though, when large numbers of bees are located near your home, or if you or your children are allergic to stings, control measures may be warranted. Because both of these genera like to make burrows in areas of exposed soil, one great long-term control is to plant a ground cover. Ground covers should discourage bees/wasps from colonizing the same area the following year. Another option is to simply fence off the colonized area and let them go about their business. By observing their hard-working activities from afar, children (and parents) can learn about tolerating these beneficials.

If chemical treatment is desired, insecticidal dusts may be applied around individual holes. The adult bees/wasps will pick up the chemical on their way in and out of the nest. For safety reasons it is best to do this at night, preferably with the aid of a flashlight covered with red cellophane. You should always wear long pants and long-sleeved shirts, and cuffs ap-

propriately tucked in to prevent bees or wasps from flying into your clothing. A head net should also be worn. If you are allergic to bee or wasp stings, get someone else to do this for you. Some chemicals that will work include carbaryl, bendiocarb, permethrin, pyrethrin, or diazinon. Dust formulations will have the greatest effect. It is difficult to eliminate all ground bees/wasps in one season. If you do treat with chemicals, plant a ground cover the following spring to keep new bees/wasps from re-colonizing the area.

There are many species of ground nesting bees. These two genera are only the tip of the iceberg. If you find and collect ground nesting bees or wasps in your yard, please submit them to the UPPDL for identification. If your ground nesting wasps are yellowjackets, control is usually warranted, and should be conducted very carefully.

-Ryan Davis, Arthropod Diagnostician

Red Fire Bugs Are the Next Nuisance in Utah

Earlier this spring, an observant citizen in the Sugarhouse area of Salt Lake City noticed brightly colored insects in his back yard. He questioned Christy Bills, Entomology Collections Manager at the Utah Museum of Natural History, about these bugs. She had never seen them before and therefore took specimens to the Utah Department of Agriculture and Food for a positive identification. In May 2008, they were confirmed as *Pyrrhocoris apterus* (Heteroptera: Pyrrhocoridae) by Tom Henry, a national specialist at USDA-APHIS. *Pyrrhocoris apterus*, also known as the red fire bug, was not known to occur in North America until now.

Because the red fire bug is a new record in North America, much of the life history is unknown and must be extrapolated from European publications. Red fire bugs are native to central Europe, but are also found in western Siberia, southwestern Mongolia, India, and northwestern China. In their native range, red fire bugs feed on seeds from a wide range of plants. Like all true bugs, they have a piercing sucking stylet that removes fluid. The most common host plant family is Malvaceae which includes mallow and linden. Some reports of cannibalism and predation on other insects have also been reported.

As with all true bugs, red fire bugs go through simple metamorphosis (egg, nymph, adult). Typically they have one generation per year, and the adults are the overwintering life stage. In the spring, females lay eggs that hatch into small, red nymphs that resemble boxelder bugs. Red fire bug adults are 0.25-0.5 inches in length, and in general the females are slightly longer and wider. The forewings are variable in size, ranging from shortened to absent. The most common form in Utah is the shortened wing adult. The forewing color pattern is also highly variable when present, but is generally red with



The uniquely colored red fire bugs have adapted quickly to life in Utah.

black spots. The wings cross over the back and are held flat against the body at rest.

So far, no one can explain how the red fire bugs were introduced into the Salt Lake City area, but likely were brought in on host plant material. These bugs have similar behaviors to boxelder bugs in that they like to congregate under leaf litter or sun themselves on structures. I do not expect the red fire bug to become a significant economic problem, but it will probably be considered another nuisance pest for homeowners. If you suspect red fire bugs in your area, please collect specimens or take pictures for the Utah Plant Pest Diagnostic Laboratory. We would greatly appreciate knowing more about the distribution in Utah and other observations you may have about this new insect.

For more detailed information, [click here](#) for the red fire bugs fact sheet located on the UTAH PESTS Web site.

-Erin Hodgson, Extension Entomologist

Fall Lawn Tasks

By Dr. Kelly Kopp, Extension Water Conservation and Turfgrass Specialist in the Department of Plants, Soils, and Climate at USU. For more information about Kelly and turfgrass research, [click here](#). See page 12 for information on Kelly's new TURF IPM ADVISORY

There are a number of things that you can do to prepare your lawn for the winter and to ensure that it comes back strong in the fall with an inherent ability to withstand insect and disease pressure. The cool night temperatures that we are currently experiencing are probably already strengthening your lawn after the hot and dry summer. You may be noticing improved grass color and density. Now is the perfect time to enhance your grass's recovery with a few simple steps.

After the summer, it is very likely that your lawn needs some supplemental fertilization. Nitrogen will be needed in the largest quantity and you should apply 1 pound of slow-release nitrogen fertilizer per thousand square feet of lawn. This will help the lawn to recover from summer stresses and will further improve grass color and density.

Fall is also an ideal time to aerate your lawn if the soil is compacted or there is a significant layer of thatch beneath the grass. The types of grass typically grown in Utah do not usually produce thick layers of thatch under normal conditions, but it is possible, especially where too much water and fertilizer have been applied. If the thatch underneath your lawn is more than 1/2 inch thick, consider core aeration to stimulate the natural decomposition process. Likewise, if you have a very fine-textured soil, compaction may occur, particularly in high traffic areas.

As the cooler weather intensifies, you will also be able to cut back on lawn irrigation. It's easy to forget that changes in the program of your irrigation controller are necessary at this time of the year. The grass does not need as much water as it did during the heat of the summer and it's the perfect opportunity for you to contribute to water conservation efforts. A great deal of water is wasted in the fall because irrigation controllers are not adjusted for the cooler temperatures.

As the weather gets even cooler and winter is just around the corner, you will notice that your lawn is growing much more slowly. At some point, you will perform your last mowing of the growing season. This is a critical time in the life and health of your lawn. Hopefully you have been mowing at a height of 2 1/2 – 3 1/2 inches to promote root growth and stress tolerance and have been recycling the clippings back into your lawn. These are good practices, but not for your final mowing of the season. The last mowing should be much shorter, from 1 to 1 1/2 inches, and you should remove the clippings.



This drought-stressed lawn would benefit from proper mowing, watering, aeration, and fall fertilization.



Core aeration helps to alleviate compaction.

Mowing at this shorter height will not leave long grass blades standing that over the winter, can lay over and increase humidity beneath snow cover. If the grass blades are very long, and there is lengthy snow cover, the disease called snow mold can occur.

After your last mowing is also the best time to apply your last fertilization of the growing season. Once again, nitrogen is of primary concern. Following this mowing, you'll want to apply 1 pound of quick-release nitrogen fertilizer per 1000 square feet of lawn. It's important that the nitrogen source be quick-release so that the grass can take it up before going dormant due to cold. This is probably the most critical fertilization of the entire growing season and should not be missed! Research has shown that this late fall fertilization provides the most benefit and drought tolerance to the lawn the FOLLOWING summer.

These simple steps will ensure that your lawn rests well over the winter and starts out in the spring healthy and strong.

Grower Profile: A Home Gardener's "Community Garden"

The vegetable garden is about 1/4 acre in size, adorned with marigolds and sunflowers, and neatly packed with every type of vegetable imaginable, all grown by eight different families, as well as the owner, Orem resident Rick Lewis. "We've been growing vegetables here for over 35 years, and this year, we decided to open up the garden to families in need. The partnership has worked out pretty well," says Lewis.

Master Gardener Rick Lewis bought his 2-acre property in 1973, and over the years, has raised sheep, pigs, chickens, turkeys, ducks, geese, milk cows, goats, and tree fruits. Now, half of the property is horse pasture, but the 1/4-acre of vegetables has remained constant. Newer fruit tree varieties now border his vegetable plot. He also added filberts and walnuts, raspberries, and five varieties of grapes including 'Concord,' 'Interlaken,' and 'Ruby Red.' "The grapes are a favorite of ours. Four rows about 100 ft. long trained on a wire trellis, plus 2 more rows about 50 ft. long. I trim the north side in the fall and do most of the picking after the first good frost. Both the grape and raspberry prunings are run through a shredder in the spring and then used for mulch."

When they decided to take on the "challenge" of sharing their vegetable plot, Lewis selected the families now gardening on his land from the LDS church ward in which he and his wife assist. "Many of these couples are young, and novice gardeners, so they are learning as they go." The Lewises are their teachers. They have provided them with Extension handouts, and patiently taught them the ABC's of vegetable growing, even down to the importance of weeding and cultivating the soil. "We came over tonight to get supper," said the couple who have planted the most vegetables. All have expressed appreciation for the help and training they have received.

Water, tilling, re-bar staking supplies, and insect and disease control all come with each gardener's package. Lewis is adamant about using IPM. He only sprays when necessary, and when he does, he often uses homemade recipes. A cocktail of pureed garlic, onion, and jalapeno peppers (harvested from his garden, of course) "works on many insects, like aphids, spider mites, caterpillars, and thrips," while a mixture of sodium bicarbonate (baking soda) and horticultural oil takes care of powdery mildew, "when I take time to use it," he says.

He also tries other techniques, like interplanting crops for insect control and to attract beneficials. He is trying basil between tomato plants to repel hornworm and aphids, and to attract pollinators, and marigolds are scattered throughout. He keeps the plants healthy, too, with mulch, compost, horse manure and an ingenious flood-watering system. He installed



Lewis with his favorite weeding tool, what he calls the "hula hoe."

large, underground pipes that circulate the irrigation water to underground cisterns. When they fill, water flows to above ground PVC pipes with large holes cut at the head of each row (gated irrigation pipe), evenly and efficiently distributing the water. "The only drawback is getting the gardeners to keep their rows cultivated and weed-free so that the water will run down the entire row," which is about 130 feet.



Lewis' water-delivery system is very efficient and easy to maintain.

This summer, Lewis' garden has been a "monitoring site" for Utah's IPM vegetable advisory program, which includes weekly scouting visits, and a half-dozen bright orange delta traps scattered about. At his garden we trap for diamondback moth (2 caught so far all summer), variegated cutworm, beet armyworm, western yellow-striped armyworm, cabbage looper, and pale western cutworm. "If USU can use this site to learn more about what fruit and vegetable pests we have in Utah, then I am happy to cooperate," said Lewis. Thanks Rick!

-Marion Murray, IPM Project Leader

In the National News

STERILE INSECT TECHNIQUE USED FOR LBAM ERADICATION PROGRAM IN CA

The light brown apple moth (LBAM) was discovered in California in early 2007, and since that point, CA officials have invested in the development of alternatives to improve eradication efforts. That work seems to be moving along faster than expected. CA Dept. of Food and Ag. is fast-tracking an approach known as the Sterile Insect Technique (SIT), in which large quantities of sterile insects are released so that the wild population cannot reproduce.

SIT has been successfully used for more than 30 years worldwide against a variety of insects—most famously the medfly. It was originally thought to take 5 to 7 years to adapt SIT to LBAM, but work has progressed more rapidly than expected. CDFA now plans to begin limited releases of the sterile moths in 2009, with a full-scale program up and running in 2011.

KIDS REDISCOVER LADY BEETLES

A new program initiated by Cornell University, called The Lost Ladybug Project, is asking children to start looking for lady beetles. Its goals are three-fold: to determine species density and number, to introduce children to the natural world, and to develop one of the largest citizen-science databases. Scientists predict that the 10,000+ children involved may generate up to 250,000 sightings.

Some species of lady beetles have become so rare that they have not been seen for years. Recently, a youngster in New York “found” the rare 9-spotted lady beetle that had not been seen in 16 years. The project’s [Web site](#) will include educational materials as well as instructions for collecting, photographing, and submitting information.

PINE OIL REPELS TICKS AND MOSQUITOES

Agriculture Research Service scientists have found that a compound,

isolongifolenone, in pine oil repels mosquito biting and two kinds of ticks as well as or better than the commonly used insect repellent DEET. In the past, it has been expensive to develop plant-based oil products and difficult to produce large quantities. To remedy this, the ARS scientists have also developed an inexpensive production method from pine oil feedstock. Partners are now being sought to bring this technology to commercial production.

PEST MANAGEMENT POLICES TO PROTECT CHILDREN

Several communities’ school IPM programs have adopted pest management policies that prohibit the use of certain pesticides on town-owned property. A few of those communities include New Paltz, NY, Rockport and Camden, ME, Voorhees, NJ, and Greenwich, CT. In addition, an organic turf management program has been implemented for the grounds of all federal buildings in the National Capital Region.

Useful Publications and Web Sites

PUBLICATIONS

- The National Resource, Agriculture, and Engineering Service and Cooperative Extension in New York has published **Raspberry and Blackberry Production Guide for the Northeast, Midwest, and Eastern Canada**. Much of the insect, disease, watering, and training systems discussed also applies to Utah. To purchase, go to the [NRAES Web site](#).
- **Watering Systems for Lawn and Gardens: A How-to Guide**, by R. Dodge Woodson discusses all types of irrigation systems and step-by-step installation instructions in 144 pages.
- NRCS (Natural Resources Conservation Service) and Oregon State

University have published a new brochure entitled “Farming for Pest Management: Habitat for Beneficial Insects.” It illustrates how farmers can attract and retain helpful predators and parasites, including those eligible for support by the Farm Bill program. To see the brochure, [click here](#).

- “Plants for Pollinators in Oregon” is a 26-page, online guide that provides information about establishing, maintaining and enhancing habitat and food resources for native pollinators in buffers, windbreaks, alley cropping, field borders, range plantings, and other practices. It is written by NRCS and USDA staff, and the pdf document can be [downloaded here](#).

WEB SITES

- www.stewardshipcommunity.com, is a new site to promote proper and effective use of agricultural pesticides through community dialogue.
- beginningfarmers.cce.cornell.edu/ provides support for beginning and diversifying farmers. It is designed for citizens of New York, but some information is applicable to new farmers in Utah.
- www.ipminstitute.org is the Web site of the IPM Institute, a non-profit group that recognizes goods and service providers who practice IPM. There is information about certification, labeling, and links to regional IPM centers.



Featured Picture of the Quarter

Dark hyphae of the fungus that causes necrotic ring spot (*Ophiostoma korrae*) can be seen growing between two turf roots. The fungus is thought to move from plant to plant by growing along the surface of the roots and rhizomes.

-Photo by Erin Frank

Calendar of IPM-Related Events

September 12, University of ID Annual Fruit Field Day, Parma, ID, 208-722-6701 ext 228

September 14-18, Biodiversity in Agriculture: Domestication, Evolution, and Sustainability, Davis, CA, harlanii.ucdavis.edu

September 16-18, Restoring the West Conference—Frontiers in Aspen Restoration, USU, Logan, UT, www.restoringthewest.org

October 6-9, North Central Forest Pest Workshop, Indianapolis, IN

October 9, Utah Comm. Forest Council/ISA-Utah Chapter Pesticide Applicators Workshop, SLC, UT, utahurbanforest.org/events

October 27-31, Western Int. Forest Disease Work Conference, Missoula, MT, www.fs.fed.us/foresthealth/technology/wifm

November 16-19, Entomological Society of America Annual Meeting, Reno, NV, www.entsoc.org/am/

November 19-20, Pacific NW Vegetable Association Conference and Trade Show, Kennewick, WA, www.pnva.org/events/

November 19-21, Utah Farm Bureau Annual Convention, Layton, UT, <http://utfb.fb.org/Website/UpcomingConventions.html>

January 29-30, 2009, Utah Hay and Forage Symposium, St. George, UT, www.utahhay.usu.edu

March 24-26, 2009, 6th International IPM Symposium, Portland, OR, www.ipmcenters.org/ipmsymposium09/

July 25-30, 2009, Mycological Society of America and Botanical Society of America Annual Conference, Snowbird, UT

New Turf IPM Advisory Offered by USU Specialists

Dr. Kelly Kopp, Extension Water Conservation and Turf-grass Specialist, and the UTAH PESTS staff, are offering a new IPM advisory subscription service. The Turf IPM Advisory will be sent on a periodic basis depending on pest activity and turf management needs. The goal of the advisory is to alert homeowners and the green industry of pest activity and seasonal maintenance.

To subscribe to the new advisory (starts Fall 2008) go to: lists.usu.edu/mailman/list-info/pestadvisory-turf, or to: utahpests.usu.edu/ipm.

The Utah Plant Pest Diagnostic Lab is part of and receives support from the Western and National Plant Pest Diagnostic Networks:



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