



UTAH PESTS News

Utah Plant Pest Diagnostic Laboratory and USU Extension

Vol. 1, Fall 2007

2007 Commercial Orchard Monitoring Re-Cap

Before discussing the pest activity for the summer of 2007, we need to cover the weather, since it is such a “hot” topic right now. Here are just a few Utah stats for the hottest summer on record to blow you away:



- July was the hottest month on record in Salt Lake City with 25 days of 95°F and over, and the warmest day at 105°F.
- The hottest temperature ever recorded (unofficial) in Utah was on July 4, just south of St. George, at 118°F (previous record was 117°F in 1985); On July 6, St. George never dipped below 92—another record.
- April was the third driest April on record.
- During the months of March through August, 306 records were set for daily maximum temperature (113 in March, 35 in April, 61 in May, 25 in June, 47 in July, and 25 in August). Almost as many record high minimums were also set.

Basically, it was a hot, dry summer with some tumultuous storms thrown in the mix. Although the dry weather kept many diseases at bay such

as apple scab and powdery mildew, and the trap catch for several orchard insects were similar to past years, other problems were not as you might expect.

CODLING MOTH



Insect Activity

This was a successful year for Utah’s commercial orchardists who use mating disruption as a codling moth management tool. (This method saturates the orchard with pheromone so the males cannot find the females.) Damage incidence and trap catch numbers were far lower than in recent years. We believe the reduced damage is a combination of diligent management practices over several years, and possibly a reduced overall codling moth population size. We cannot speculate on any specific reasons as to why the codling moth population would be lower, except to say that several years’ worth of mating disruption has played a large roll.

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Fall Gardening Tasks to Reduce Pests

Many plant-feeding insects and mites seek out protected sites to spend the winter. Among this group of pests seeking a cozy spot in your yard are squash bugs, Mexican bean beetles, earwigs, strawberry root weevils, and spider mites. You can take action now to get a jump-start on pest management for the next gardening season.

Here are some things you can do:

- Remove any herbaceous (annual) plant material at the end of the season. Compost or dispose of the plant material as soon as possible. The longer you leave the debris around, the longer many pests have to find a comfortable place to overwinter.

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Armyworms and
Cutworms in Turf

Bed Bugs

Cranberry Girdler

Pear Psylla

West Nile Virus in Utah

Western Corn Rootworm

MARKETING THE LAB

Look for a marketing push from UTAH PESTS to increase our visibility to state legislators. Earmarked state funding will allow us to focus more on serving Utah rather than seeking outside funding sources. Your support of the lab to local officials is much appreciated!

www.utahpests.usu.edu

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- Rototill your garden soil in the fall. This destroys many pests that can overwinter there by bringing them to the surface where they will freeze or desiccate.
- Plant a fall and winter cover crop such as annual ryegrass. The cover crop helps reduce weeds, retain soil moisture, and add nutrients to the soil when it's tilled in next spring.
- In the late winter to early spring, prune diseased and dead limbs from woody shrubs and trees. Wait until the woody plants have hardened off for the winter before pruning. Early fall pruning may predispose plants to winter injury.
- Protect shrubs and other plants with winter-sensitive roots and crowns, such as rose, blackberry, and grape. Place leaves, grass clippings, or other type of

mulch around the base. Winter injury will cause stress and reduced growth for cold susceptible plants next spring. This in turn tends to make these plants more prone to attack by pests.

- Continue to water your perennial plants through the fall. Although their growth is slowing and less water is needed, a water-stressed plant is more vulnerable to winter injury.
- Plan now for next year by keeping a record of garden plants and cultivars you liked best, those with the fewest problems, and pest problems that should be addressed next spring with dormant oil sprays (such as aphids, scale, pear psylla and red mites).

-Diane Alston

Upcoming Feature for Extension Agents: “The Diagnosticians’ Corner”

With 12 county Extension offices receiving new Leica photographic scopes, agents can now learn to diagnose common insect and pathogen-related problems in their own offices. My goal for “The Diagnosticians’ Corner” is to select arthropods and plant diseases that are frequently encountered that time of year, and outline their identification characters, biology, life history and control methods—there will be a lot of pictures, too.

This extremely functional column will include a photographic guide to the identification of organisms using pictures taken by a scope identical to those that were given to several county Extension offices. These are high quality scopes that can be used to diagnose a lot of common pests and diseases, but they do have magnification limitations. Given these limitations, I will try to use identification characters that can be readily viewed from 8-35x. This magnification range will not always be adequate for identifying minute fungi, bacteria or arthropods, so I (and the new disease diagnostician) will select easily identifiable organisms.

Even if your county did not received a

scope, this column will still have value when used in conjunction with a hand lens, to identify organisms down to order or possibly family. Keep a copy of this column in your files to use as a reference when you do receive a new scope. If you have an idea to improve the column, or an idea for a feature insect or disease common to your county please email me your idea and I will try to include it in the column. I can be reached at: ryan.davis@biology.usu.edu.

-Ryan Davis



The new Leica microscopes can show the specimen on a computer monitor.

Western Corn Rootworm Can Lodge Profits

You may not think of corn as a huge agricultural crop in Utah – and you are right. We only harvest about 42,000 acres per year for silage and 12,000 acres per year for grain. Utah’s average harvest per acre for silage and grain is about 22 tons and 163 bushels, respectively. Even though we aren’t in the Corn Belt, our corn can still have insect problems. In the past, aphids, spider mites, corn earworm, seedcorn maggot, dusky sap beetles, and cutworms have all caused stand and yield problems. However, this summer I heard several reports of western corn rootworm causing lodged corn.



Adult western corn rootworm

Marlin Rice, Iowa State University Entomology

Western corn rootworm is native to North America, but never built up to damaging levels until continuous-corn production became popular about 50 years ago. As the name suggests, the larvae are the damaging stage and feed on corn roots. Initially, root tips will be discolored from larval feeding, but the roots can develop brown lesions or be pruned completely off over time. As you could imagine, damaged roots cannot absorb and move water throughout the rest of the plant. A weak root system also makes corn susceptible to “goose-necking” or lodging. Lodged plants will fall over during wind or rain storms and



Non-Bt corn lodged by western corn rootworm feeding

Marlin Rice, Iowa State University Entomology

make harvest difficult or nearly impossible.

In many cases, crop rotation will minimize corn rootworm problems. Sometimes western corn rootworm can still be a consistent problem with corn rotation if new fields are planted in close proximity to harvested fields. Using a granular insecticide at the time of planting can significantly reduce the survivorship of feeding larvae. In-furrow or banded applications are effective and work best if followed by cultivation and irrigation. Foliar or aerial products applied later in the season are typically not effective because the canopy prevents the product from reaching the soil-dwelling larvae.

Later in the summer, adults like to feed and mate on the silks. Under normal conditions, adult western corn rootworms rarely build up to damaging levels. Adults can be used to predict larval pressure in continuous-corn the following year, so fields should be scouted weekly. To learn more about scouting, economic thresholds and treatment options for western

corn rootworm, [click here](#).

-Erin Hodgson

Boxelder Bugs Making the Move Again

Boxelder bugs are generally considered nuisance pests in Utah. They go relatively unnoticed most of the year, except when they



Clemson, USDA, forestryimages.org

start invading houses and other structures in

large numbers during the fall. The good news is boxelder bugs are essentially harmless to plants and animals, and are not a serious problem every year (with a few exceptions; see page 7). But the bad news is they can stain fabrics and other surfaces, and are most abundant following hot, dry summers. So expect these insects to be a problem this year if you haven’t already encountered them in your office or home.

Adult boxelder bugs are about 1/2-inch long, and are easily

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James B. Hanson, forestryimages.org

Colony of boxelder bug nymphs

identified by their black and red wings that cross over the back, bulging red eyes, and obvious black antennae. Newly hatched nymphs are bright red and about 1/16-inch long; eventually nymphs will be more red and black with every molt until they reach the adult stage. Nymphs and adults have piercing sucking mouthparts and prefer to feed on the leaves, flowers, and seed pods of female boxelder, maple, or ash trees. Large numbers will congregate on pod-bearing trees; however, boxelder bugs will occasionally feed on male trees.

Some homes and other buildings seem especially attractive to

boxelder bugs. Of course having female boxelder trees does increase the likelihood of having adults massing on buildings during the fall. The color, size, and shape of the structure may not be as important as the amount of sun exposure; adults tend to accumulate on southern or western parts of a building. The adults are the overwintering stage and try to squeeze into cracks until spring. Sometimes they work themselves into the building interior and actively look for an escape.

Insecticides are generally not recommended for boxelder bug control because they are not completely effective or long-lasting. There are several registered products for serious outbreaks in Utah (acephate, bifenthrin, carbaryl, deltamethrin, malathion, and permethrin). Professional pest controllers should be considered when treating large trees. Unfortunately, removing female trees will not prevent these nuisance insects because they are highly mobile. Periodically washing bugs off trees and buildings with soapy water will help reduce large numbers and minimize fall migration. Simply vacuuming nymphs and adults around window sills, furniture, and floors will prevent permanent fabric staining.

For more information, [click here](#) to see the UTAH PESTS boxelder bug fact sheet.

-Erin Hodgson

European Earwig can be a Problematic Garden and Nuisance Pest



Earwig adult

If you look up the feeding habits of the European earwig (*Forficula auricularia*) in a reference book, it will state that it primarily feeds on decaying organic matter. Well, this isn't true for Utah and probably for many arid regions. It is true that the European earwig is omnivorous (feeds on multiple food types), including its predaceous habits, but the injury they cause to seedlings, tender shoots, flowers, and ripe fruits far outweighs their benefits.

A lengthy drought beginning in the late 1990s appears to have increased earwig damage and exacerbated plant stress problems in the Intermountain Region. For example, the severity and distribution of earwig injury in northern and central Utah has increased in the last 5-10 years. The drought has likely reduced the

volume of organic matter available for detritivores such as

earwigs and driven them to feed more on living plant material. However, even in situations with adequate detritus, earwigs continue to feed on garden plants. They seem to have adapted to the herbivorous life style. An increasing number of landscape managers and home gardeners are searching for solutions to earwig problems.

The European earwig is an exotic introduction to North America. There are several species of native earwigs in the West, and these are not plant pests. Earwigs are easy to recognize by their large pincer-like appendages on their hind ends, called cerci. The cerci are used in self-defense and courtship and will only deliver a mild pinch at most to humans. Their body is elongated, flat, and red-brown in color. They are 1/4 - 1 1/4 inches in length. Adults have a short pair of leathery wings covering a folded pair of membranous wings. They are weak fliers and mostly move about by crawling.

Earwigs can emit a foul-smelling, yellow-brown liquid from their scent glands. They are omnivorous and will scavenge on dead insects and decayed organic matter, prey on live insects, and chew on living plant material. Earwigs get their name from an old superstition that they would crawl into the ears of sleeping people and bore into the brain. This belief is not true.

Continued on page 8

Submitting an Insect Sample? Here's How

In June 2007 I began working for the Utah Plant Pest Diagnostic Laboratory (UPPDL) as the arthropod diagnostician. My main function is to identify arthropod specimens submitted by Extension, home owners/renters, farmers, corporations, etc., and lend advice on available management options. Other roles I will serve as the arthropod diagnostician are: participating in invasive/exotic pest surveys through the Cooperative Agriculture Pest Survey program, entering survey data into the National Agricultural Pest Information System and Integrated Survey Information System databases, outreach, and training Extension agents in basic insect identification skills using our new Leica microscopes. I will also begin revising USU Extension fact sheets and creating new ones.

As a taxonomist and diagnostician serving all of Utah, I identify a *huge* diversity of arthropods. Given this, it is difficult to know everything about all insects, arachnids, etc. Therefore, it is very difficult for me to help clients when I get an unrepresentative or improperly preserved arthropod sample. When trying to arrive at the proper identification it is vital I have all the necessary body parts intact. While I can usually identify arthropods with just a few parts, I can provide the most accurate conclusion with a whole specimen, which is imperative when making insecticide recommendations based on that identification. So to help me, and ultimately the citizens of Utah, I have provided a few guidelines below. While most agents already submit great samples, informing non-Extension clients of the protocol is a secondary objective of this article. Our main concern is short-term specimen preservation for transport to the UPPDL, which I will make as simple a task as possible.

GUIDELINES FOR SUBMITTING A SAMPLE:

1. Collect a whole, intact sample.

Why? The identification of many

arthropods depends on very minute characters, such as the difference in the number of tarsal segments between the front, middle, and hind legs, or the number of segments on an antenna. Missing two front or two middle legs or both antennae, for example, can lessen the accuracy of identification.

2. Collect 5 or more samples.

Why? When I receive samples, some require pinning so that I can maneuver them into the correct positions to look at specific identifying characters. If I happen to miss-pin a sole sample, it could ruin critical characters, lessening the accuracy of identification. I realize that multiple samples cannot always be collected—do your best.

3. Place hard- and soft-bodied arthropods in 70-80% ethyl alcohol solution in an appropriately sized, leak-proof vial/container with lid.

Why? Samples that are shipped dry usually disintegrate in the shipping process and render the specimens useless.

4. Put larvae, especially caterpillars, in *KAAD solution.

Why? Strong alcohol solutions can shrivel soft-bodied larvae and distort or remove external coloration. *KAAD solution is a specially formulated chemical cocktail that keeps larvae from “shrinking,” and also helps preserve the original color of soft-bodied adult arthropods and larvae. If you can not afford the KAAD solution, then a 70% ethanol solution can substitute.

5. Completely fill out the proper identification request form. (See below for location of the new UPPDL submission forms.)

Why? Adding your name and ad-

dress to the form will help me learn the names of all the agents or submitters. Giving descriptions of host or area where an insect was collected greatly helps in identification, as many arthropods prefer to feed on one particular plant species.

If there are some items mentioned above that you do not have (like KAAD, ethyl alcohol, vials and lids, collecting nets and kill jars), consider ordering them online at www.bioquip.com. It is fairly inexpensive to obtain all of the preservation vials, lids, fluids, and other collecting equipment needed to provide a high quality sample to the UPPDL, or for your own collections.

Since starting at the UPPDL, I have received numerous old arthropod submission forms with samples. We would like every Extension agent to gather all of those old forms, place them in the blue recycling bin, and then print off copies of our new arthropod submission form (and plant disease form) from our Web site. Both of these forms can be found by [clicking here](#). In addition to the new forms, more detailed instructions for submitting both arthropods and plant diseases can be found there (utahpests.usu.edu/uppdll/htm/forms).

I look forward to meeting all of Utah's Extension agents and helping solve even the most complex arthropod mysteries. By working together to submit quality samples complete with the new submission form, properly and completely filled out, we can provide our clients with the most accurate diagnoses and treatments possible. From here on out I will put down my ruler, step off my soapbox, and get back to identifying bugs. Thank you in advance for helping us streamline our sample submission protocol and making our services that much better.

-Ryan Davis

Necrotic Ring Spot Common in Early Fall



Serpentine necrotic areas in lawn caused by necrotic ring spot

Growing a good healthy lawn is a challenge in Utah due to our arid climate and duration of higher seasonal temperatures starting as early as May and extending to September or longer. Under these conditions necrotic ring spot can do some real damage to lawns. This turfgrass disease is caused by the fungus *Ophiosphaerella korrae*. Symptoms of this disease usually occur in early fall or late spring and initially appear as light green to straw-colored patches from several inches to several feet in diameter in the turf. As the disease progresses, patches develop more of a doughnut or frog-eye pattern. The ring becomes matted and craterlike, whereas the grass inside the ring remains healthy and green. The patches may be localized to one part of the turf area or widely scattered throughout. Rings may eventually coalesce to create larger arcs of dead turf. Symptoms may persist throughout the growing season and increase in size and severity in successive years.

The necrotic ring spot pathogen survives from year to year on dead, colonized bluegrass roots and crowns or on the surface of living roots. The fungus actively colonizes the outside of roots at soil temperatures between 65 and 80°F. Along the Front Range of the Rockies these temperatures can occur from mid-May through mid-September, with some variation on the west slope and at higher elevations. The pathogen eventually penetrates roots and colonizes the root cortex. This either

debilitates or kills roots and leads to a decrease in water and nutrient uptake by the plant. Plants with extensively damaged root systems are more prone to injury or death, particularly during periods of high temperature or drought stress. Thus, symptoms often do not show up until late summer or early fall even though root colonization occurs earlier. Symptoms may persist through the winter.

Necrotic ring spot can be a difficult disease to manage, but there are several grass cultivars that can help minimize damage. Some of these resistant varieties of Kentucky bluegrass are Adelphi, Apex, Eclipse, Kelly, Midnight, NuBlue, Nugget, NewStar and Wabash, and have moderate to good resistance. Consider using these when establishing a new area from seed or overseeding extensively damaged areas. Necrotic ring spot is not a problem on perennial ryegrass or tall fescue, so these grasses can also be used to overseed damaged areas. Mixing perennial ryegrass seed with resistant bluegrass seed (20:80 ratio based on weight) can also suppress necrotic ring spot.

Core cultivate the turf area at least once a year (spring or fall) to help reduce thatch buildup and improve soil drainage. Do not over-water. (This is a difficult guideline to apply in Utah as too much water results in increased disease potential but too little water can cause excessive stress to the lawn.) Water the lawn to a depth of 6 to 8 inches as infrequently as possible. Maintain a mowing height of 2.5 to 3 inches.

Avoid excessive amounts of nitrogen fertilizer (more than 4 lb N/ 1,000 square feet), especially when most of this nitrogen is applied in the fall. Consider the use of a slow-release fertilizer. This allows for more uniform release of nitrogen through the growing season and avoids “bursts” of growth following fertilizer application. If necrotic ring spot develops, water the grass lightly at mid-day during periods of high temperatures. This will help cool the grass and may prevent additional dieback.

Preventive fungicide applications may be effective in suppressing necrotic ring spot but the timing of fungicide applications is critical for effective disease management and many of the recommended chemicals are expensive and require several seasons of application to achieve control. Check with your local County Extension office for suggestions on chemicals to manage this disease.

-Kent Evans

Reference:

Corwin, B., Tisserat, N., and Fresenberg, B. 2007. Integrated Pest Management, Identification & Management of Turfgrass Diseases. University of Missouri Extension Publications, available online at: <http://extension.missouri.edu/explorepdf/agguides/pests/ipm1029.pdf>.

Only slight modifications were made to the original information.

Codling Moth Biological Activity/Predictions

Year	Date of first Flight
1996	May 1
1997	April 30
1998	May 1
1999	May 9
2000	April 21
2003	May 10
2004	April 17
2005	May 10
2006	May 4

The table above shows the dates for 9 of the past 11 years of the first codling moth flight for one orchard in Utah County. For that same location, this year's date of first flight for 2007 (also known as a biofix) was April 28, which is not too far off the norm, especially when compared to 2004. However, the months of May-August were significantly hotter than those in 2004. In fact, the number of growing degree days (which measures heat accumulation based on daily max and min temperatures) by August 31 was 2852 in 2007 versus just 2482 in 2004.

What does this mean? It means lots of moths have been able to reproduce very quickly. As the temperatures stay warm (especially minimum daily temperatures), the length of the insects' life cycle shortens. Typically, northern Utah sees two full generations of codling moth and a partial third generation (meaning that only a small portion of the larvae from the second generation pupates. The remaining larvae enter into a resting phase—diapause—for the winter.) However, this year we saw a full third generation in many locations, including Salt Lake, Tooele, Weber, and Box Elder counties, and parts of Utah County.

Because the majority of the larvae in this third generation will be entering diapause, we can probably expect a greater population of moths at the start of the 2008 season.



Peach twig borer entry

PEACHTWIG BORER

Trap catch numbers for peach twig borer were average. Damage, however, including shoot strikes and fruit entries, were down from last year. Some orchards in Box Elder County, where there is high twig borer pressure, saw similar damage to last years' crop.

FIRE BLIGHT

Fire blight reared its ugly head in many areas of northern Utah this season, with extensive damage in localized areas. One could not have predicted this based on the dry spring; however, only one or two rainfall or "wetting" events at the right temperature



Bacterial ooze from a fire blight canker (l) and typical shoot blight

are all it takes. There was a heavy rain on May 3 and 4 during late bloom. Where present, existing fire blight cankers had already begun to "ooze" bacteria by this time, and so the rain spread bacteria throughout those orchards, causing numerous floral infections. A second heavy, windy rain on May 23 spread more oozing bacteria from the floral infections to tender young shoots.

Another reason for the wide-spread disease incidence has to do with the susceptibility of the host tree. The most susceptible trees are currently the most in-demand apple varieties today: Fuji, Jonagold, Gala, etc. Resistant varieties can still get infections, but the bacteria are stopped quickly in their tracks.

Finally, there are several colonies ("isolates") of fire blight bacteria that have developed resistance to the antibiotic treatment of choice, streptomycin (strep). As the use of strep increased the last several years, the population of bacteria that could withstand it also increased. Growers were forced to use alternative antibiotics that are unfortunately not as strong a preventative treatment as streptomycin.

OTHER PESTS



Damage caused by spider mite (l) and green peach aphid (r)

Not surprisingly, there were localized outbreaks of both aphids and spider mites across northern Utah orchards on all fruit crops. The mites thrive in heat, so that was to be expected.

The incidence of coryneum blight (or shothole—a disease of peaches and cherries) was reduced significantly this year due to the dryer, hotter weather and growers' diligent management practices.

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Mike Pace, USU Extension, Box Elder Co.

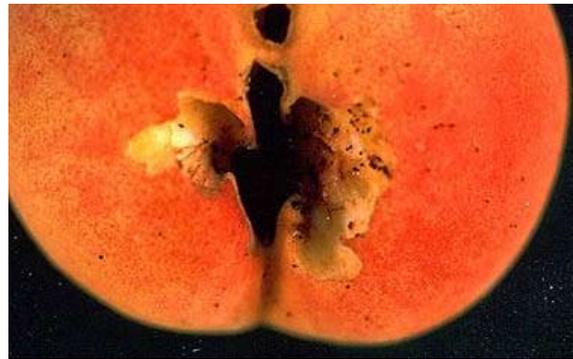
Box Elder County Agriculture Agent Mike Pace reported an odd outbreak of boxelder bugs on peaches (shown at left). Some fruits had over 50 bugs feeding on them, rendering

the fruits unmarketable. According to Pace, it has been about 5-6 years since seeing this level of activity.

All in all, it was not such a bad year for our fruit growers. The tart cherry and early peach harvests were slightly reduced from last year, while the apple and late-season peach crops are predicted to be heavy. With diligent IPM pest management practices and optimal watering and nutrition, Utah orchardists have given us fruit-lovers some tasty treats to devour.

-Marion Murray

Earwigs, continued from page 4



Earwig feeding damage on European bird cherry (l), peach (above), and a home-made trap using bacon grease (r)

A wide range of plants are hosts for the European earwig including annual flowers (especially marigolds, dahlias, zinnias, and hollyhocks), herbs (especially basil and dill), vegetables (especially lettuce, spinach, Swiss chard, cole crops, beets, sweet corn silks, beans, and carrots), roses, caneberrries, apricots, peaches, shrubs, and small trees. When earwig populations are high, injury can be especially severe on tender leaves and shoots, flower petals, and ripe fruits. Earwigs are nocturnal. If ragged chewing injury on plants is observed, but no culprit can be found during the day; check the plants at night with a flashlight for the presence of earwigs.

Because earwigs are also beneficial due to their predaceous and decomposer feeding habits, populations should only be suppressed when they are causing harm. Begin in the spring and early summer by locating “nests” of females brooding their young. These earwig congregations occur in soil under stones, boards, mulch, compost piles, and other debris. Target control efforts on nests and on plants when injury first appears.

Reduce refuges where they can hide during the day such as debris, groundcovers, and larger pieces of mulch. Place traps in the evening and remove earwigs in the morning. Effective traps include shallow cans baited with vegetable or other odorous oils, moist rolled newspaper, cardboard boxes baited with oatmeal or bran and with pencil-sized holes near the bottom, hollow bamboo canes, and sections of garden hose. To prevent

earwigs from climbing into trees, shrubs and other plants, apply a band of sticky adhesive such as Tangletrap® around the trunk or stem.

Insecticides can also help suppress earwigs. Select an effective product and apply it in the evening just before earwigs will be most active. Recommended conventional insecticides include permethrin, esfenvalerate, bifenthrin, carbaryl, and malathion. Effective organically-certified insecticides include azadirachtin, pyrethrum, and diatomaceous earth. Use enough water in the application to cover the plants or to carry the chemical into the top layer of soil or mulch where the earwigs are hiding. Immature earwigs are more susceptible to insecticides than adults so make applications early in the season. Adults have a thick, hard exoskeleton that is difficult to penetrate. Not all insecticide products are registered on edible plants. Be sure to fully read the product label before making an application.

To reduce the entry of earwigs into buildings, create a clean, dry border using gravel or stone immediately around the foundation wall; eliminate refuges near the foundation such as groundcovers, climbing vines, weeds, thick mulches and vegetation, and piles of debris, leaves, or wood; seal cracks and crevices around windows, doors and utility cable holes in walls; apply insecticides (see recommended products above) around the foundation and flower beds or turf within several yards of the home.

-Diane Alston

In the National News

EPA SUED

Farm workers and advocacy groups filed a lawsuit against the EPA in August to stop the use of chlorpyrifos. Chlorpyrifos (sold as Lorsban) is a widely-used insecticide that works as a nerve toxin. Human exposure can cause dizziness, vomiting, convulsions, numbness in the limbs, and death.

Lorsban is one of the most heavily used insecticides in U.S. agriculture. In 2001, an EPA report found that it poses risks to the health of workers and to the environment, and banned residential use. The report identified serious risks for children who are exposed to chlorpyrifos through drift onto schoolyards and outdoor play areas as well as take-home residues on farmworkers' clothing and skin.

ORGANIC LAWN CARE INCREASING

Homeowners, municipalities, and green industry professionals are all driving up demand for organic lawn care products. Market researchers estimate a 10 percent annual growth for the organic fertilizer market, twice the projected growth for all lawn and garden goods.

The nation's largest lawn-care company, TruGreen-ChemLawn, has dropped ChemLawn from its name to capitalize on consumers' growing preference for organic lawn care.

NEW GARLIC FUNGICIDE TESTED

Statewide, allium growers in California have abandoned production on more than 13,000 acres of prime farmland due to the disease white rot. California produces over 80% of the country's garlic, and a new fungicide offers hope.

Scientists at UC Davis tested diallele disulfide, and found it to be 95 to 99 percent effective in controlling the pathogen. The garlicky-smelling compound is found naturally in garlic and onions. It acts as a biostimulant when applied to the soil, tricking white rot into germinating. Then, in the absence of a crop, the fungus quickly dies.

NEW DISEASE-RESISTANT SUNFLOWERS

Three new germplasm lines are now available for breeding sunflower hybrids that resist downy mildew as well as produce oil rich in oleic fatty acid.

Downy mildew attacks sunflowers as both seedlings and mature plants, causing white cottony growths in the young plants, and club-like roots and stunted growth in older ones. Sunflower growers have historically kept mildew in check by planting seed treated with metalaxyl, but the fungus has become resistant to this fungicide. Development of downy-mildew-resistant hybrids has been a priority, especially with the discovery of over a dozen new, virulent races of downy mildew since 2003.

DOW REGISTERS NEW INSECTICIDE GLOBALLY

Dow AgroSciences received global registration for spinetoram, a new spinosyn insecticide. The compound, which will be sold under the brand name Delegate WG, will be available in late 2007 in the U.S. for use on pome fruits. Spinetoram was accepted for review under the EPA Reduced-Risk Pesticide Program in 2006.

Spinetoram has shown excellent broad spectrum control of significant pests for the tree fruit and tree nut markets, including the control of codling moth. Research has demonstrated that spinetoram does not impact most key beneficial insects in tree fruit, tree nut, vine, and vegetable crops, is effective at lower use rates compared to most currently available insecticides, and is less persistent in the environment compared to older compounds.

HOUSE PASSES FARM BILL

The 2007 Farm Bill, which addresses agriculture, the environment, and health and hunger issues, passed in the House of Representatives. With this bill, conservation spending will increase about 35 percent: spending for the Farm and Ranch Land Protection program increased to \$280 million annually, the Environmental Quality Incentives Program increased to \$2 billion annually, and the Cooperative Conservation program was expanded.

Useful Web Sites and Publications

WEB SITES

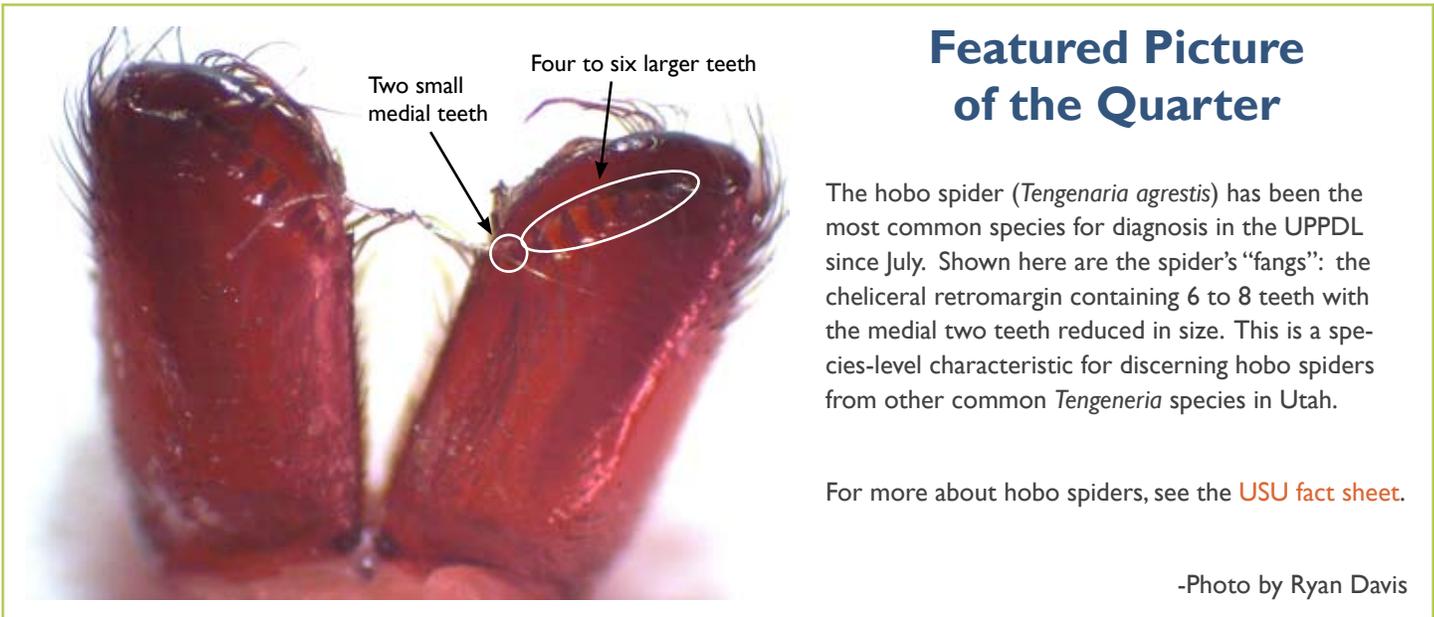
- www.pesticidefreelawns.org: information on organic lawn care from The National Coalition for Pesticide-Free Lawns
- www.beyondpesticides.org: a non-profit organization providing information on growing organic and

IPM methods, and maintains a list of professionals that offer reduced-risk services

- www.bugguide.net: a useful site filled with images to assist in insect identification

PUBLICATIONS AVAILABLE

- "Major Existing EPA Laws and Programs That Could Affect Agricultural Producers" (www.epa.gov/agriculture/agmatrix.pdf), is a compliance assistance tool produced by EPA in June 2007



Featured Picture of the Quarter

The hobo spider (*Tegenaria agrestis*) has been the most common species for diagnosis in the UPPDL since July. Shown here are the spider's "fangs": the cheliceral retromargin containing 6 to 8 teeth with the medial two teeth reduced in size. This is a species-level characteristic for discerning hobo spiders from other common *Tegenaria* species in Utah.

For more about hobo spiders, see the [USU fact sheet](#).

-Photo by Ryan Davis

Calendar of Insect, Disease, and IPM-Related Events

- September 18-20, Restoring the West Conference: Sagebrush Steppe, Utah State University, Logan, UT, www.restorethewest.org
- October 5-8, ASLA Annual Meeting & EXPO, San Francisco, CA, www.asla.org/nonmembers/meetings.html
- October 7-9, Western Plant Health Association Annual Meeting, Tuscon, AZ, www.healthyplants.org/events.htm
- October 7-9, Utah Mosquito Abatement Association 60th Annual Conference, Park City, UT
- October 15-19, Western International Forest Disease Work Conference, Sedona, AZ, www.fs.fed.us/foresthealth/technology/wif
- November 1-2, Sustainable Ag Expo, Paso Robles Event Center, Paso Robles, CA, www.sustainableagexpo.org
- November 6-7, Utah Community Forest Council National Arbor Day Foundation Fall Conference, Thanksgiving Point, Lehi, UT, www.utahurbanforest.org/events.html
- November 7-9, National Conference on Agriculture & the Environment, Monterey, CA, www.agwaterquality.org/2007conference/
- November 15-16, Utah Farm Bureau Convention, Salt Lake City Marriott Hotel, utfb.fb.org/index.html
- November 28 - December 1, American Society of Consulting Arborists Annual Conference, Nashville, TN
- January 8-10, 2008, Western Disease Conference, Portland, OR
- January 28-30, 2008, Utah Green Industry Conference & Trade Show, South Towne Expo Center, Sandy, UT
- March 24-26, 2009, 6th Annual IPM Conference, Portland, OR

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