



# UTAH PESTS News

Utah Plant Pest Diagnostic Laboratory and USU Extension

Vol. III, Fall 2009

## Birds and Bats for Alternative Pest Management

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### News Highlights

#### TURF PROBLEMS TOP UPPDL DISEASE SUBMISSIONS

While the UPPDL is currently without a plant disease diagnostician, we are keeping up with the many disease samples with help from the Oregon State University Plant Clinic. With the wet spring this year, turf diseases have been especially prevalent, including [gray and pink snow molds](#) and [take-all patch](#). (Click orange links for fact sheets.)

To prevent diseases next spring, take action this fall. Aerate your lawns, mow to 1-1.5 inches, and remove grass clippings for the final cut of the year.

[www.utahpests.usu.edu](http://www.utahpests.usu.edu)

Some bird and bat species can be useful allies in running a successful IPM program. They are motivated, efficient, and cost-effective pest predators. Foraging by birds or bats alone will not completely prevent pest injury, but in a healthy landscape or farm, they can play an important role. There are ways to manage or manipulate your garden or farm to attract the best and hungriest workhorses.



### BIRDS OF PREY

Birds of prey feed on small mammals (mice, gophers), birds, and large insects. The kestrel (above) is a small hawk that has long been used in some Utah fruit orchards for seasonal mice control. The McMullin Orchard in Santaquin has maintained kestrel boxes for over 10 years. They find that kestrels return year after year to the boxes, but are highly territorial, so the McMullins only use about 6-8 boxes per 400 acres. The McMullins monitor the boxes for starlings, and remove their nests. Claude Rowley of Cherry Hill Farms built and installed a box this summer on his 250-acre Goshen farm. The box remained empty until mid-summer, when he decided to add some nesting material of dried sticks and twigs. Five days later, a pair moved in that eventually fledged four young. Rowley is impressed with the mouse control, and says that so far, the only place they can find mice is in the highest pressure area, although he has yet to see the full effects until after they mow this fall. He will be adding more boxes in Goshen as well as on other family farms.

Barn owls (found in limited numbers in Utah) feed on large rodents and birds, and their number one choice of prey is gophers. They can be of great value in all agricultural situa-



tions, but their population is dwindling due to lack of nesting sites.

To attract birds of prey:

- **kestrels:** Screw nesting boxes to power poles or trees 10-20 feet above ground, away from human activity (shown above). Install up to 1 box per 5 acres to increase chances of nesting, but note that a pair may defend up to 250 acres. Adding a bit of nesting material (twigs, wood shavings) can help attract the birds. Monitor each box weekly and remove starling nests. (Watch for starlings moving in and out of the box.

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A starling nest will fill the cavity floor, with a deep bowl in the back and material up the sides. Eggs are blue like robins'. Clean the boxes each year.

- **barn owls:** To attract/keep birds on the farm, do not destroy old wooden barns; barn owls will not nest in metal barns. Nest boxes can be used in place of cavity trees or abandoned buildings. Owls may patrol up to 200 acres per nesting site.
- Install hawk perches at least 8 feet off the ground; one grower in Utah attached posts to his irrigation risers and they are often used by hawks.

### SMALL INSECTIVOROUS BIRDS



Some of the most common and hard-working are:

- **bluebirds** – eat large numbers of a variety of insects including grasshoppers; nest in boxes or cavities
- **chickadees** (shown above) - eat more insects per bird (up to 900/day) than any other, including scale, aphid, leafhoppers; nest in boxes or cavities
- **robins** – primarily eat insects in spring when raising young; nest in trees
- **swallows** – eat flying insects including mosquitoes; variety of nesting sites
- **woodpeckers** – eat borers, bark beetles, and overwintering codling moths;

feed by extending their long tongue into tight crevices; cavity nester

- **wrens** - eat grasshoppers, slugs, others; nest in a variety of places

In orchards (particularly organic), birds such as juncos, flycatchers, swallows, and sparrows have shown to help regulate codling moth densities by feeding on diapausing larvae. A study of a California apple orchard showed up to 83% predation of codling moth larvae by birds during the winter (Baumgartner 2000). Insectivorous birds are most successful in organic orchards. To attract and keep birds in larger orchards, maintain diverse habitats (border planting mixes, alternate row plantings), leave a few older apple trees or large dead limbs for cavity nesters, and provide water and nesting boxes.

Cropland bordering woodland, shelterbelts, or riparian areas will also see benefits of bird predation, as birds will feed far into the field when prey is available (Puckett et al 2009). In research conducted in Ohio, red-winged blackbirds were shown to consume large quantities of corn earworm and other corn pests (Bollinger and Caslick 1985).

To attract insectivorous birds to your property:

- place birdhouses and nesting boxes throughout; monitor all boxes weekly during the nesting season and remove competitive nests such as starlings or house sparrows, and leave bluebirds, house wrens, chickadees, and tree swallows; clean out the boxes each year
- provide nesting materials including small pieces of string, dryer lint, twigs, and shavings at various locations
- keep at least two sources of water filled throughout the year, one raised and one that sits on the ground
- plant a variety of trees and shrubs including those that provide nuts, berries, and seeds



## Ash and Elm Yellows in Utah

Few people are aware of yellows diseases in these important urban trees. This esoteric group of diseases gets its common name from the general yellowing of affected plant foliage.

Yellows diseases are caused by mycoplasma-like organisms, similar to those that cause malaria. And like malaria, these diseases are vectored by insects, in this case leafhoppers. Because few people are aware of yellows diseases and diagnosis can be difficult, we know little about their distribution in Utah. Unlike fungi, which can be grown on agar media, mycoplasma-like organisms cannot. We confirm their presence by using molecular tests. All of these factors make field diagnosis or confirmation very difficult and time-consuming.

Ash yellows was first found in the eastern U.S., where it spread to north central and northeastern states, and southern Canada. In Utah, it was found on velvet ash by Dr. Wayne Sinclair while vacationing near Zion National Park in 1994. (He is co-author of the very useful book *Diseases of Trees and Shrubs*. If you don't have a copy, I highly recommend it.) At the time, he found a high incidence of the disease, but few severe symptoms. It probably arrived to the State on infected nursery stock. White ash and green ash are most susceptible, and 10 additional ash species have been shown to exhibit symptoms.

Symptoms on ash include slow growth, chlorosis, reduced apical dominance, witches' brooms, and a slow debilitating decline ending in death. Witches' brooms, while characteristic, rarely appear until the tree is near death.

Elm yellows is commonly found in the eastern U.S., and sporadically in the northeast. It has not been confirmed in Utah via molecular testing, but I believe it does occur in the State. This disease, previously known as "elm phloem necrosis," affects American, slippery, and winged elms, while Siberian elm is somewhat tolerant.

Infected trees have branch yellowing, wilting, and dieback. The interior wood often shows a brownish stain that may be mistaken for Dutch elm disease, though more "butterscotch" in color, and more spotted in appearance. Those with a keen sense of smell can detect a wintergreen odor coming from elm yellows-infected tissue.

I have seen this disease on a few occasions in Logan, where it has caused elms to appear generally unhealthy. One American elm located in Logan that I was monitoring appeared to have Dutch elm disease, which is caused by a fungus. I sampled



Fred Baker, USU



PA DNR - Forestry Archives

A stand of ash (top) shows symptoms of ash yellows: witches' brooms, yellowing, and decline. Elm yellows (bottom) causes chlorosis that may be confused with iron deficiency. Trees infected with either disease can be killed.

the woody tissue showing the typical vascular discoloration on several different occasions in an attempt to isolate the pathogen for my forest pathology class. Both attempts were unsuccessful; I thought I was losing my touch. The city ultimately cut the tree down, and the following spring, a witches' broom formed on the stump – an Aha! moment for me! The tree most certainly was infected with elm yellows. I have been observing another tree with similar symptoms. This tree is dwarfed compared to the other trees planted at the same time, and shows early fall color each year.

The vectors for elm yellows in Utah are unknown, and we have no idea how widely distributed it is in the State.

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Management options for yellows diseases are few. Most often, the only option is to remove the tree. To save adjacent trees, the roots between the healthy and diseased tree should be severed. Studies using injection of tetracycline antibiotics have sometimes been effective, but are shown to be costly, and are not registered for use in Utah.

Yellows diseases are assuredly present in Utah, and are pos-

sibly overlooked for other diseases or abiotic causes. It is important for Utahns to be aware of these diseases to elm and ash species to avoid purchasing infected nursery stock, and to avoid wasting resources treating these diseases as a nutrient or water deficiency problem.

-Dr. Fred Baker, Professor, Forest Pathology,  
Department of Wildland Resources

## POULTRY

Poultry in the farm or garden has many benefits beyond providing food. They eat insects, snakes, and rodents, and provide fertilizer.

Guinea fowl work best within a vegetable garden because they can be trained to eat only insects or other creatures and avoid the produce. They have keen eyesight, easily spotting prey from a distance. They are not suitable for small neighborhood lots because they have a very loud, distinctive call against intruders or other alarms. For farms, though, they are tough, disease-free birds, continuously on the move in search of food. They will also eat weed seeds, and their droppings make excellent fertilizer.

Layer chickens are quieter, and more suited for smaller farms. They eat voraciously, including grasshoppers, flies, ants, grubs, and weeds, providing good fertilizer. They are not compatible with a vegetable garden, especially with young plants and when food is nearing harvest. They scratch the earth endlessly, and will peck at plants and produce. But they are useful in “neutral” areas, or for cleaning up a garden after harvest, “tilling” the garden in spring, or fertilizing/weeding fallow beds. Some organic farmers use poultry and geese in their orchards to keep insect and weed populations at tolerable levels.

## BATS

Bats can be an important component of an IPM program because they are the only night flying predator that targets moths. Not all bats can be attracted to the farm. Of the Utah bat species, the big brown bat is the most common that is adaptable to farmland or cities. An established colony feeds by the millions on larger insects. The little brown bat (locally abundant) also adapts to farmland, and feeds on flies (including mosquitoes), moths, mayflies, beetles, and leafhoppers. A single little brown bat can catch 600 mosquitoes per hour.

The Natural Resources Conservation Service runs an environmental quality incentives program (EQIP), and has provided funds to establish bat colonies. According to the program, an organic farmer in western Oregon was able to establish several bat colonies, and as a result, reduced his pesticide use for corn earworm from 13 to two applications per season.



Bat houses should be installed against buildings where they stay warm at night. After installation, bats may take several years to find the houses. Bat houses can be purchased from many farm and garden supply catalogues.

There is research underway looking at the use of bats to manage codling moths. A UC-Davis farm advisor is trapping bats in orchards and using DNA testing of the guano for evaluation of codling moth presence. Bats are generalist feeders, but where pest populations are high, they are likely to target that insect. Previous UC-Davis studies showed that moths comprise up to 70% of the diet of bats (Long 1996).

-Marion Murray, IPM Project Leader

## References:

- Baumgartner, JoAnn. 2001. Birds, Spiders Naturally Control Codling Moths. *Tree Fruit Magazine*, April 2001. pp 5-7.
- Bollinger, E.K, and Caslick, J.W. 1985. Red-wing blackbird predation on northern corn rootworm beetles in field corn. *J. Appl. Ecol.* 22: 39-48.
- Long, Rachel. 1996. Bats for Insect Biocontrol in Agriculture. *The IPM Practitioner*: 18 (9): 1-6.
- Puckett, H.L., et al. 2009. Avian foraging patterns in crop field edges adjacent to woody habitat. *Agriculture, Ecosystems & Environment* 131 (1): 15

## Click the following orange links for more information:

- [kestrel boxes](#) and use (pdf, see page 4)
- [barn owl](#) info and nesting box plans
- an [overview](#) of using poultry in sustainable systems
- [“Bat houses for Integrated Pest Management: Benefits for Organic Farmers, Final Report”](#)
- [Bat Conservation International](#), with houses to purchase, or a plan to build your own



## Raspberry Horntails Severe in 2009

Raspberry is an important agricultural crop in Utah. Utah growing conditions are conducive to caneberry production, and there is a strong local market for the tasty fruits. During 2009, infestation of raspberry canes by the cane boring insect, raspberry horntail (Cephididae: *Hartigia cressonii*), has been severe. A Bear Lake grower reported more than 80% infestation of primocanes in one raspberry variety, 'Killarney'. Horntails attack the vegetative, or primocanes, of both annual- and ever-bearing varieties. Some basic life history information on raspberry horntail is available in the literature (Perry et al. 2003), but details on its biology and pest management are lacking. Research was initiated in 2009 to gain a better understanding of the insect's life history in raspberry in northern Utah. In upcoming years, research will focus on raspberry varietal susceptibility, developing a degree day model to assist with control timing, and testing insecticidal and biological control products.

The raspberry horntail is a type of wood wasp. It is named for the small single spine or horn on the tip of the tail (Fig. 1). It was first documented in Utah in the 1980s, and has since displaced the rose stem girdler, a flatheaded beetle, as the most common borer in the upper portions of canes. A third species of caneborer found in Utah is the raspberry crown borer, a clearwing moth, that attacks the base of canes and is often found co-existing with horntail in the same plantings.



**Figure 1.** The larva of the raspberry horntail has a spine (see arrow), giving the insect its name.

Observations in 2009 suggest there is a single generation of horntail in northern Utah. Larval development was spread out suggesting that adults are active and lay eggs over an extended period of time. Adults emerge from overwintering

sites within last year's canes beginning in the early spring, and females insert eggs under the bark of the current year's primocanes. Eggs are difficult to find, but once young larvae hatch, they tunnel upwards inside the cane. We observed narrow trails starting low on the canes. Egg-laying is initiated in the early spring, so eggs are likely laid into new cane growth soon after it emerges from plant crowns. The trails of small larvae spiral within the canes, and were associated with the ring of cambial tissue under the bark layer. This suggests that young larvae preferentially feed in the nutrient-rich tissues of the cambium. With careful observation, dark trails of small larvae could be seen under the bark of canes.

More obvious symptoms of cane infestation were not observed until the larvae were larger and had tunneled to the tops of canes. After substantial larval feeding, cane tips wilted (Fig. 2) and leaves turned brown and dried up (Fig. 3). Older larvae spent at least a week tunneling throughout the terminal portion of the canes causing dieback.



**Figures 2 and 3.** Wilting (top) and drying leaves (bottom) caused by feeding of the horntail larva inside the cane.

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**Figures 4, 5, and 6.** While examining horntail larvae, we found ectoparasites (top), ectoparasite pupae (middle), and endoparasites (bottom), possibly an ichneumonid wasp.

At least two types of parasitoid wasps were observed attacking horntail larvae within the cane tips. One is an ectoparasite (feeds externally on its host) where multiple parasitoid larvae were observed feeding on a single horntail larva (Fig. 4). Multiple pupae of the ectoparasite were found along with the dead and shriveled horntail larva within a cane (Fig. 5). A second type of parasitoid is an endoparasite (develops within its host). Based on appearance of the adults, the endoparasite may be an ichneumonid wasp (Fig. 6). Adult parasitoids will be collected as they emerge from canes for positive identification.

Once horntail larvae are mature, they turn around and burrow downwards through the cane pith to form a cavity in the lower part of the cane in which to spend the winter. The first horntail pupation chambers were observed within canes in late July in northern Utah.

We have learned some important points about raspberry horntail biology: egg-laying appears to begin in the early spring just after new canes emerge from the crowns of plants, although there appears to be a single generation, larval activity occurs from May to at least August, wilting of the cane tip isn't observed until horntail larvae are older and have fed substantially in the upper cane, several types of parasitoids attack the horntail in northern Utah, and horntails pupate in the lower parts of canes where they will be more protected from winter conditions.

Using this information on horntail biology to improve their management, we can recommend: 1) begin insecticide treatments just after new canes begin to grow in the spring (avoid insecticide applications during bloom that will harm pollinators), 2) look for early symptoms of young horntail larvae within canes – dark trails just under the bark, 3) prune out infested cane tips when wilting symptoms are first noticed, 4) protect parasitoids that provide natural biological control of horntail larvae by avoiding toxic insecticides once horntails are feeding in cane tips, and 5) prune canes in the late winter to early spring before horntail adults emerge – canes of ever-bearing varieties can be completely pruned back, and floracanes of summer-bearing varieties that appear unhealthy may contain horntail pupae and should be removed.

-Diane Alston, Extension Entomologist

**Reference**

Perry, E. J., M. P. Bolda, and L. J. Bettiga. 2003. **Caneberries: Raspberry horntail.** UC Pest Management Guidelines. UC Agriculture and Natural Resources Publication 3437 (2 pp.). University of California, Davis, CA.



## Common UPPDL Insect Scouting and Submissions

As the insect season begins its decline into the cold winter months ahead, some pests are nearing or just hitting peak injury. This article covers three pests recovered from scouting expeditions in northern Utah and recent submissions to the UPPDL: dusky sap beetle, Mexican bean beetle, and locust borer.

### DUSKY SAP BEETLE



The dusky sap beetle (Nitidulidae: *Carpophilus lugubris*, DSB) is a secondary pest of sweet corn and is widely distributed from South America into much of the United States. In addition to sweet corn, DSB feeds on apple, peach, tomato, pea, yucca, rotting vegetation, discarded fruit and debris from vegetable fields, and on bacterial ooze from trees.

DSB overwinter as adults in decomposing plant material and at the bases of trees and other plants; pupae may also overwinter in the soil. Adults (shown above alongside a larva on corn kernels) emerge in spring, mate, and deposit eggs in about two weeks. Eggs develop into adults in about 30-35 days. Early generations of DSB are usually not problematic, but later generations are often laid on silks or kernels of sweet corn. Sweet corn becomes especially attractive 10-15 days after silking begins as the corn kernels begin to swell with sugar. DSB larvae—small, cream-colored with brown heads (shown above)—feed upon corn kernels causing minor damage. Economic losses from DSB are usually because of the presence of larvae in the corn ear, not because of the damage they cause.

#### Management options:

- plow under crop debris
- plant tight, long-husked corn varieties
- harvest corn immediately when ripe
- remove damaged and over-ripe vegetables from the area
- remove or properly compost vegetable debris

- apply an insecticide (example ingredients include esfenvalerate, lambda-cyhalothrin, zeta-cypermethrin) daily beginning seven days before harvest and continue to three days before harvest.

### MEXICAN BEAN BEETLE



Adult MBB (top) are differentiated from beneficial lady beetles by the horizontal rows of 8 black dots on each elytra. The branched spines of the larva (bottom) begin as solid yellow; the tips of the spines turn black as the larva matures.

Mexican bean beetle (Coccinellidae: *Epilachna varivestis*, MBB) is a major pest of beans and may be found from Central America, up to the Rocky Mountain States and Southern Canada, and over to New England. MBB hosts include snap beans, lima beans, soybeans, cowpeas, mung bean, and occasionally black-eye peas, velvet bean, alfalfa, and clover.

MBB is one of two plant-feeding lady beetles (the other being the squash lady beetle, *Epilachna borealis*). The other

continued on next page

UPPDL Scouting, continued from previous page

members of this familiar beetle family are beneficial, with both adults and larvae feeding on aphids, mites, scales, etc. The adult beetles look similar to other lady beetles, but are more yellow-orange turning to a darker bronze as they age (shown on previous page); the larvae are very distinctive, brandishing rows of branched, black-tipped spines.

MBB overwinter as adults under leaf litter and debris at the edge of fields, along fence rows, or at the bases of trees. Adults emerge in late May when temperatures become warm enough, and continue through mid-summer. Adults typically search for garden peas early in the season and then move to beans on which they feed and lay eggs on the undersides of leaves in clusters of 40 or more. Newly hatched larvae feed gregariously at first, and then disperse into smaller groups to feed. Larvae pupate on the plants where they have been feeding. The adults emerge, and search for new bean hosts and overwintering sites. Peak activity typically occurs in mid July through August.

**Management options:**

- eliminate overwintering locations by plowing host material under soil
- plant bean crop late, or plant early, fast-maturing bean varieties
- plant more resistant, or less-preferred bean varieties such as Asian long beans
- exclude beetles by using floating row covers
- check undersides of bean leaves during summer, and smash MBB eggs and larvae
- preserve natural enemies by using selective insecticides
- use insecticide (azadirachtin, esfenvalerate, lambda-cyhalothrin, zeta-cypermethrin, malathion, etc.)

**LOCUST BORER**

Locust borer (Cerambycidae: *Megacyllene robiniae*, LB) is a common pest affecting black locust (*Robinia pseudoacacia*) and its cultivars, including 'Purple Robe'. Honeylocust (*Gleditsia*) is not attacked. Found throughout North America, LB adults are most abundant in September in Utah, but can occur from August through October. Presence of adult beetles occurs about the time of goldenrod bloom, on which adults may be seen feeding on pollen.

Adult LB lay eggs on locust bark in the fall. The eggs hatch and the small larvae bore into the inner bark where they overwinter. In the spring, when buds begin swelling, larvae bore into the sapwood and then heartwood. They pupate in mid-summer and emerge from the existing 3-4-inch long tunnel.



Whitney Cranstaw, Colorado State University



James Solomon, USDA Forest Service

Adult LB (top) are about 1 inch long, black with yellow w-shaped stripes on the elytra, and have long antennae. Severe infestation (bottom) can weaken trees, making them susceptible to wind damage.

Symptoms include branch failure, water sprouting, swollen areas on the limbs or trunk, oozing in spring, and sawdust-like frass. Smaller trees may easily break, while larger trees can have deformed growth from multiple branch breakage.

**Management options:**

- maintain tree vigor by watering properly and using practices that will minimize stress
- for small or specimen locust trees, apply insecticide (carbaryl) to the trunk and larger scaffold limbs before egg-laying (about mid-August); re-apply every three weeks through late September
- in early spring at bud swell, soak the bark and larger branches with carbaryl to target overwintering larvae located just below the bark

-Ryan Davis, Arthropod Diagnostician



## In the National News

### **BAYER TO STOP ENDOSULFAN DISTRIBUTION**

Bayer has chosen to voluntarily end distribution of endosulfan in all countries where it is now legally available starting in 2010 following an action led by various groups in 16 countries. One of the primary groups campaigning for a ban on endosulfan is the Pesticide Action Network (PAN), which has worked on this issue for many years. Endosulfan is currently prohibited in 60 countries, and has been linked to deaths by acute injury to farmworkers. Other manufacturers will still distribute their products (Thiodan) in the U.S. PAN will continue to push for an international ban of this product.

### **EPA WARNS AGAINST MISLABELING**

The EPA recently sent a notice to producers and suppliers of specialty pesticides and fertilizers clarifying label regulations and warnings against the use of false and misleading claims like "Professional" and "Professional Grade." EPA says that the term "Professional Grade" is misleading and illegal, implying that pesticides are classified by grade, which they are not. The Office of Pesticide Programs will decide on whether to refer this matter to the Office of Enforcement and Compliance Assurance for potential enforcement action.

### **EPA TO REVIEW IMIDACLOPRID**

A Final Work Plan has been issued by the EPA for the registration review of the insecticide imidacloprid. This is agency protocol for every pesticide, every 15 years. Over 12,000 comments were sent to the EPA over the 90-day comment period of the Preliminary Work Plan. The majority of comments urged the agency to suspend use of imidacloprid due to suspected effects on pollinators, while some were in support of its continued use. The Final Work Plan states that the agency will seek field-based data reports on imidacloprid to better understand its

impact on pollinators, endangered species, and humans. [Click here](#) for the full document. The final decision on registration will occur by September 2014.

### **PATHOGEN KEEPS TREE IN CHECK**

Black cherry trees are invasive in Europe, and an Agricultural Research Service study has shown that the reason is a missing plant pathogen. *Pythium*, a soil-borne fungus-relative, keeps black cherry trees in check in its native North American range, killing seedlings in the forest. Although this pathogen is found almost world-wide, only the aggressive form occurs in the cherry's native range. Virulence testing such as this is unique, providing a clear answer why a plant is sparse in one area, and invasive in another.

### **INSECTS' BIOLOGICAL CLOCKS AFFECT PESTICIDE SUSCEPTIBILITY**

Oregon State University entomologists have recently shown that insects that have circadian "clocks" are more vulnerable to pesticides at certain times of the day. In fruit flies (*Drosophila* sp.), for example, when sprayed with fipronil or propoxur at mid-day when their defenses are strongest, researchers found that it took a triple dose of pesticide to get the same lethal effect as when their defenses were weakest, at dawn, dusk, and in the middle of the night. This rhythmic defense mechanism involves absorption, distribution, and excretion. This study leads the way to investigate specific insects and specific insecticides on what times of day they are most vulnerable to exposure.

### **WELL-KNOWN HERBS FIGHT INSECT PESTS**

Herbs such as rosemary, thyme, clove, and mint are becoming organic growers' best allies against insect pests. More than ten years of research out of the University of B.C. is showing that these

herbs' essential oils represent a new class of natural insecticides that pose little environmental risks. Some kill insects while others repel. There are currently products on the market containing these ingredients, and the products available are expected to increase. The current downside of these products is that they are short-lived and less potent, but worldwide research will probably result in improved options.

### **SOMETIMES BIOLOGICAL CONTROLS FAIL**

Biological control of aphids with parasitic wasps does not always work. Parasitic wasps lay eggs inside the host and the hatched larvae feed on the host until emergence as adults. University of Arizona entomologists have discovered that pea aphids carrying a virus-infected bacteria are protected from parasitic wasps. The virus carries genes that code for toxins that kill the wasp eggs. They found that the code, a mobile genetic element, can actually be incorporated into the host bacteria or into other bacteria species, giving the recipient the ability to make the toxin.

### **GRASSHOPPER INFESTATION SEVERE IN 2009**

Many mid-west and western states including Utah have seen severe grasshopper infestations in 2009, some areas reporting the worst in more than 20 years. Ranchers in several states have had to sell part of their herds due to reduced hay production and depleted pasture land. In some areas, there were more than 60 grasshoppers per square yard, much higher than usual. In severe instances, USDA APHIS covers all costs for spraying on federal land, 50% on state land, and 33% on private land. The agency predicts that the problem will be worse next year.

## Useful Publications and Web Sites

### PUBLICATIONS

- “Farm Made Report” uses four examples: syrup, packaged salad greens, spreads, and table eggs to show how to process organic ingredients into value-added organic products on the farm. Published by Kerr Center. Access it [here](#).
- “Building a Community Garden in Montana” contains tools and strategies for developing, funding and leading a community garden project. Access it [here](#).
- **Prevention of Bug Bites, Stings, and Disease** is a book by Daniel Strickman and others that contains 15 chapters focused on identification of biting and stinging insects, and ways to eliminate or manage problems. The book is loaded with full color pictures and practical information. Oxford University Press.

### WEB SITES

- **Biopesticides-Effective Use in Pest Management** is a free online course on biopesticides, with a test at the end. Currently, credits are not offered for Utah pesticide applicators, but may be pending.
- **The Pollinator Partnership** provides videos, detailed regional planting guides of native pollinator plants, and more.
- **Urban Bee Gardens** is a site produced by UC-Berkeley, containing results of an intensive bee research project looking at plant-bee interactions. It includes plant lists, bee species information, and a “bee-friendly garden builder” tool.
- **Pest Management In and Around Structures** contains detailed information on urban pest management, homeowner IPM, school IPM, and expert answers, provided by the national eXtension network.
- **University of MN Organic Ecology** contains information, education and announcements about organic ecology research and outreach.
- **EntLibrary.org** is a collaborative effort of NC State University, The Entomological Foundation, Iowa State University, and Clemson University. It provides teachers and learners with access to high-quality, peer-reviewed entomology teaching materials.
- **Household Products Database** is provided by the US Dept. of Health and Human Services.
- **Help the Honeybees** is a program sponsored by Haagen Dazs focused on honey bees, with educational materials, desktop wallpaper, and a “bee store.”
- **Pest PI. Game** is a game provided by the University of Nebraska-Lincoln, teaching about IPM in schools.
- **Junior Pest Investigators** has four lessons that can be used in class to teach students about ipm and common pests.
- **Biopesticide and Organic Database** for IPM is an invaluable and useful tool for searching strictly for these products. You can search by specific crop, pest, and state.
- **Introduction to Pesticides for Retail Employees** is an online training course is for retail and garden center employees and others who advise residents about home and garden pesticides. It gives basic information about types of pesticides, selecting pesticides, and pesticide safety. It is provided by UC-Davis, but has utility for Utah.
- **Moving Beyond Pesticides – Environmentally Safe Tools for Use in an IPM Program for Retail Employees** is a second online training course offered by UC-Davis, that gives a basic introduction to the principles of IPM including information about pest identification, changing conditions that favor pests, and combining various least-toxic methods for the best long-term management of pests.



## Hobo Spiders Are Back!

Once again it is time for hobo spider mating season. Expect to see an increase in the number of hobos in, and around your home. Use sticky traps along baseboards, door sweeps on all doors leading outside, and clean regularly. Spraying for hobo spiders

is relatively ineffective and should be reserved for homes with severe infestations to reduce the population. For more information on hobo spiders please see this [USU Fact Sheet](#).



## Featured Picture of the Quarter



Most cicadas insert their eggs into living or dead twigs of trees and shrubs. Smaller twigs with cicada eggs may be killed. Shown at left are cicada eggs inside a currant cane. Upon hatching, nymphs drop to the ground and burrow into the soil. There they feed on the sap of plant roots, and depending on the species, will emerge as adults 2-17 years later. The cicada song, produced only by the males, is the loudest in the insect world.

-Photo by Sharlyn Richards  
(former student employee of Diane Alston)

## Calendar of IPM-Related Events

September 15 - 19, 5th National Small Farms Conference, Springfield, IL, [www.conferences.uiuc.edu/conferences/conferenceviewer2/view.cfm?conf=20033](http://www.conferences.uiuc.edu/conferences/conferenceviewer2/view.cfm?conf=20033)

September 27 - October 2, IUFRO meeting: Forest Insects and Environmental Change, Jackson Hole, Wyoming, [www.usu.edu/beetle/IUFRO.htm](http://www.usu.edu/beetle/IUFRO.htm)

October 27 - 28, Restoring the West Conference, Logan, UT, [www.restoringthewest.org](http://www.restoringthewest.org)

November 4 - 5, Southern Utah Green Conference, St. George, UT, [www.utahgreen.org](http://www.utahgreen.org)

November 18 - 20, Utah Farm Bureau Annual Convention, Davis Convention Center, Layton, UT, [utfb.fb.org/Website/UpcomingConventions.html](http://utfb.fb.org/Website/UpcomingConventions.html)

December 4 - 5, Sustainable Ag Pest Management Conference, San Louis Obispo, CA, [www.ccof.org/pcaconference](http://www.ccof.org/pcaconference)

January 25 - 27, 2010, Utah Green Conference, Salt Lake City, UT, [www.utahgreen.org](http://www.utahgreen.org)

February 25 - 27, 2010, 26th Annual Pest Management Conference, Society of American Florists, Orlando, FL, [www.safnow.org/](http://www.safnow.org/)

February 21 - 24, 2010, 10th Annual Pesticide Stewardship Conference, Savannah, Georgia [tpsalliance.org/conference/introduction.htm](http://tpsalliance.org/conference/introduction.htm)

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