



What's Inside

iPIPE: A New Early Warning System for Invasive Fruit Pests in Utah

What's Eating My Plant?!?

Gone Turfing

Overseeding Turf to Minimize Diseases

"The Other" Raspberry Cane-Borers

Invasive Pest Alert: Brown Marmorated Stink Bug

Aphids Aplenty in Alfalfa

Being an Informed Consumer

Herbicide Damage on Vegetables

A New Invasive Threatens Small Grains Production in Utah

Sipha maydis was recently found in southeast Utah on volunteer wheat plants.



Tessa Grasswitz, New Mexico State University

The hedgehog grain aphid (*Sipha maydis*) is an invasive grass-feeding aphid that is native to Europe, Asia, the Middle East, and parts of Africa. It has been established in Argentina since 2002. In the U.S., this pest has been reported from California, New Mexico, Colorado, Georgia, and Florida. This spring, the hedgehog aphid was found on volunteer wheat just south of Monticello in San Juan County, Utah by Bob Hammon (Entomologist and Extension Agent, Tri-River Area, Colorado State University) and his team.

Little is known about this aphid other than it feeds exclusively on grasses, may prefer mature cereals, and causes a yellowing or chlorosis of the plant near the site of feeding. It is also known to transmit barley yellow dwarf virus, a very destructive disease of cereals with symptoms that include stunting and a yellow or red discoloration of leaf tips.



Melissa Franklin, Colorado State University, Tri-River Area Extension



Bob Hammon, Colorado State University, Tri-River Area Extension

The hedgehog grain aphid is black with white spiny hairs. Feeding by the aphid can cause yellowing, rolling, and desiccation of leaves.

The hedgehog aphid can be easily identified by its black color, white spiny hairs covering its abdomen, and short pore-like cornicles (i.e., the pair of upright backward-pointing tubes found on the last abdominal segment). Mature wingless aphids

UTAH PESTS Staff

Diane Alston

Entomologist
diane.alston@usu.edu
435-797-2516

Bonnie Bunn

Vegetable IPM Associate
bonnie.bunn@usu.edu
435-797-2435

Ryan Davis

Arthropod Diagnostician
School IPM Associate
ryan.davis@usu.edu
435-797-2435

Marion Murray

IPM Project Leader
Editor, Utah Pests News
marion.murray@usu.edu
435-797-0776

Claudia Nischwitz

Plant Pathologist
claudia.nischwitz@usu.edu
435-797-7569

Ricardo Ramirez

Entomologist
ricardo.ramirez@usu.edu
435-797-8088

Lori Spears

USU CAPS Coordinator
lori.spears@usu.edu
801-668-4056

Utah Plant Pest Diagnostic Lab

BNR Room 203
Utah State University
5305 Old Main Hill
Logan, UT 84322

UTAH PESTS News
is published quarterly.

To subscribe, [click here](#).

All images © UTAH PESTS and USU
Extension unless otherwise credited.

utahpests.usu.edu

EXTENSION 
UtahStateUniversity

Pine Pitch Moths, continued from previous page

are glossy black and have hardened abdomens. Because of its coloring, it has also been referred to as the “black aphid.”

The Utah CAPS team has submitted a proposal to USDA to conduct surveys next summer for the hedgehog aphid to learn more about its distribution throughout the state.

Please contact Dr. Lori Spears (lori.spears@usu.edu) if you find a suspect specimen.

-Lori Spears, USU CAPS Co-Coordinator

References:

Corrales, C.E., A. Castro, M. Ricci and A.F.G. Dixon. 2007. *Sipha maydis*: Distribution and Host Range of a New Aphid Pest of Winter Cereals in Argentina. *J. Econ. Entomol.* 100(6): 1781-1788.

Hammon, B. 2015. *Sipha maydis*: a potential threat to Colorado wheat production. Colorado State University Extension. Available at: wci.colostate.edu/Assets/pdf/Sipha.maydis.pdf

Integrated Pest Information Platform for Extension and Education (iPIPE): A New Early Warning System for Invasive Fruit Pests in Utah

Utah's Cooperative Agricultural Pest Survey (CAPS) program recently received funds to help develop a monitoring and information technology system for sharing pest observations and information for timely management decision-making.

The Integrated Pest Information Platform for Extension and Education (iPIPE) is a national program that encourages agricultural stakeholders to contribute pest observations to a common database. This in turn helps farmers and others track, predict, and manage new and emerging pests that threaten our nation's crops. Eventually, the iPIPE pest database will be transferred to a national pest observation depository (Bugwood Network) to facilitate future research. In addition, iPIPE will provide undergraduate students with hands-on extension and diagnostic experiences.

Utah's program will focus on providing timely and science-based information on invasive fruit pests, such as spotted wing drosophila and brown marmorated stink bug, but may also include information on endemic pests such as codling moth and peach twig borer.

Dr. Lori Spears, USU's CAPS Coordinator, and three undergraduate student interns will be conducting weekly farm visits throughout the summer to scout fields and to discuss and promote iPIPE. If you have any questions or interest in having your farm scouted for these pests, or to be included in this new management tool, please contact Dr. Spears at lori.spears@usu.edu.

Becoming an iPIPE participant is simple! Request an iPIPE account by visiting the iPIPE platform (ipipe.zedxinc.com) or by emailing ipipesupport@zedxinc.com. For more information, visit the iPIPE Education Site.

-Lori Spears,
USU CAPS Co-Coordinator

iPIPE is supported by a USDA AFRI \$7 million grant awarded to PI Dr. Scott Isard at Penn State University, and is a collaborative effort among a diverse group of stakeholders including Utah State University. Additional funding for iPIPE is provided by the United Soybean Board and the Georgia Peanut Board.

What's Eating My Plant?!?!

Perhaps the most widely recognized type of insect damage to plants is chewing damage. Chewing damage is caused by insects with mouth parts consisting of two opposing mandibles, or jaws. Right now there is a lot of damage being done in vegetables by insects with chewing mouthparts. Chewing damage to plants from insects can take many forms. Foliage or flowers may simply disappear as it is completely consumed by some insects. Other times, a plant may look ragged and, upon inspection, have chewed edges or centers. Sometimes plants are cut at the base and fall over. Chewing damage inside a plant is usually referred to as mining or boring. Sometimes only the upper or lower surfaces of a plant are consumed, leaving a brown, scorched appearance or openings between the veins, called skeletonization.

Some of the more common insects found in Utah that cause problems in vegetable gardens include leafminers, beetles (Colorado potato beetle, cucumber beetle, flea beetles, Mexican bean beetle), caterpillars (armyworms and cutworms, corn earworm, cabbage looper, imported cabbageworm, tomato hornworm), earwigs, grasshoppers, and snails and slugs.

LEAFMINERS

Leafminers can be flies, beetles, moths, or sawflies. These insects tunnel between the upper and lower leaf surfaces, feeding on the soft inner tissue and avoid the tough epidermis. They are often classified by the pattern of the mine they create. When larvae are mature, they either cut the leaf surface and drop to the soil to pupate, or pupate inside the mine. The two most commonly found leafmining insects that cause problems in gardens include the spinach leafminer (*Pegomya hyoscyami*) and the vegetable leafminer (*Liriomyza sativae*).

BEETLES

Damage from beetles can vary with species, size, and life stage. Larvae of the Mexican bean beetle (*Epilachna varivestis*) feed on the underside of bean leaves producing a lacy appearance,



Left: Leafminer larvae hatch from small oval eggs and begin feeding inside leaf tissue leaving mines.



Right: Beetles consume leaf tissue between leaf veins, causing a lacy or skeletonized type of injury, such as seen on this bean leaf.

also known as skeletonizing, while the adults chew holes in leaves. Adult flea beetles also chew holes in leaves, causing characteristic “shothole” injury (many small holes or pits in leaves). The adults of the Colorado potato beetle (*Leptinotarsa decemlineata*) however, leave notching wounds along leaf margins.

CATERPILLARS

Caterpillars, such as the cabbage looper (*Trichoplusia ni*) and the imported cabbageworm (*Pieris rapae*) cause holes on leaves, and may occasionally cause serious defoliation when feeding. Initially feeding is concentrated on outer leaves, but as the caterpillars mature, their feeding intensifies, creating tunnels in the heads of broccoli or cabbage. Other caterpillars such as cutworms, also chew on buds, shoots, and may cut seedlings close to the ground. Corn earworm caterpillars (*Helicoverpa zea*) tunnel into various fruiting vegetables, in addition chewing on leaves.

GRASSHOPPERS

Grasshoppers use their chewing mouthparts to tear away plant tissue. In addition to leaves, they feed on many aboveground plant parts such as flowers, fruits, seed heads, and stems. The most damaging grasshopper species have broad habitat preferences and host plant range. These species are capable of building up over several years to high numbers in local areas, and migrating considerable distances as the vegetation is consumed.

continued on next page

What's Eating My Plant?, continued from previous page



Symptoms of grasshopper feeding include irregularly-shaped holes on the edges or within the foliage.

EARWIGS

The diverse diet of earwigs includes primitive plants (mosses, lichens, and algae), vascular plants, fungal spores, small invertebrates, and decaying organic matter. As opportunistic predators, they provide a benefit by preying upon plant pests such as aphids, scales, caterpillars, maggots, and mites. In contrast, their herbivorous eating behavior makes them a common pest in agricultural crops, home gardens, and landscapes. Earwigs feed on the buds, flowers, fruits, and leaves causing direct plant damage, reduced crop yields, and aesthetic injury to a broad range of agricultural plants including vegetable fruits, leafy vegetables, and herbs. Earwigs often require intervention to reduce their damage to plants.

SNAILS AND SLUGS

These pests are not insects but are mollusks that are more closely related to shellfish, such as mussels and clams. Snails and Slugs are active at night or on dark, cloudy days. During the day they seek relief from the sun and heat in shade under plants, rocks, wood, or compost piles. They need moisture to thrive but survive in reasonably dry conditions by hiding in protected areas.

Slugs and snails feed on a wide variety of living plants, on fungi and decaying plant materials. They are particularly damaging to new seedlings and maturing vegetables or fruits that touch the soil. They chew irregular holes that have smooth edges in leaves. They eat flowers and clip off small plants and plant parts. They damage strawberries, tomatoes, basil, lettuce, beans, cabbage and many other vegetables.



Row covers can be used to protect young plant from many kinds of insects. They are typically used to exclude insects from feeding or laying eggs on leaves.

MANAGEMENT

Plan Ahead: Use preventive strategies where possible. Planting early and late crops, for example, can avoid the major activity period of pest insects when plants are young and more vulnerable to insect damage.

Monitor for Pests: Monitoring will help identify and target the susceptible life stages and assist in timing control measures.

Row Covers: Row covers exclude insects from feeding and/or laying eggs and are often used when plants are young and vulnerable.

Traps/Baits: Traps for earwigs (for example, tuna fish can with bacon grease or rolled cardboard) and baits for grasshoppers (wheat bran + carbaryl or *Nosema locustae*) can help decrease their populations.

Enhance Biodiversity: Plant a variety of plants in varying heights and flowering times. This will make the garden more attractive to beneficial insects which will provide biological control for many pest insects.

-Bonnie Bunn, Vegetable IPM Associate

Gone Turfing

Every spring and summer the number of turf samples submitted for diagnosis to the UPPDL skyrockets. Most of the time, turf problems are similar—spots, rings, or dead patches of turf. We have found that diseases and abiotic problems are the primary issues affecting turf. We do see insects, in particular billbugs, chinch bugs, sod webworms, armyworms and cutworms.

Although turf diseases are commonly diagnosed, the UPPDL does not often recommend fungicides because often they don't provide consistent control. Instead, we encourage integrated pest management (IPM) strategies to help strengthen the lawn, minimize stress, and create a diverse, more pest-resistant lawn. The following recommendations are commonly given by our lab for the majority of turf samples, and can be used by county-level USU Extension faculty and Master Gardeners who conduct diagnoses.

SOIL TESTING AND FERTILIZATION

It is good practice to have baseline soil measurements to guide management decisions, including soil nutrition, pH, cation exchange capacity, soluble salts (that occur from fertilizers or deicing salts), texture, and organic matter. Conduct soil testing every 3 years to guide proper management. Often, fertilizers and other products are used without knowing if they are needed or how much is needed. For example, excess fertilizer use could lead to soluble salts in the soil, negatively affecting water uptake and root growth, a common problem seen by our lab. To have your soil analyzed, contact the USU Analytical lab: www.usual.usu.edu.

WATERING

Many Utah lawns are watered too frequently and to an insufficient depth. In addition to water conservation issues, light, infrequent watering can lead to poor root development and thatch buildup, resulting in a stressed, disease- and insect-prone lawn.

Lawns should be watered every 3 days and receive 1.5 to 2 inches of water per week during the summer and fall, (seasonal rates and intervals will vary). Deep, infrequent watering will help build a deeper root system capable of tolerating drought stress.

To determine your appropriate watering schedule, follow the instructions in USU's "Turfgrass Watering" or "Simple Sprinkler Performance Testing" fact sheets. If you live in Davis, Duchesne, Iron, Juab, Morgan, Salt Lake, Sanpete, Summit, Uintah, Utah, Wasatch, Washington or Weber counties,

Top 10 Turf Arthropods in Utah

1. Billbugs
2. Sod Webworm/
Cranberry Girdler
3. Cutworms
4. Armyworms
5. Chafers
6. Chinch Bugs
7. Banks Grass Mite
8. May/June Beetles
9. Leafhoppers
10. Clover Mites

Top 10 Turf Diseases in Utah

1. Necrotic Ring Spot
2. Summer Patch
3. Abiotic issues
4. Curvularia
5. Fusarium
6. Snow Mold
7. Fading Out
8. Melting Out
9. Take-All Patch
10. Brown Patch

*Planting mixtures of two or more grass species or two or more disease-resistant cultivars will reduce the susceptibility of a lawn to necrotic ring spot and summer patch. Cultivars of perennial ryegrass are also recommended as a mix with disease-resistant Kentucky Bluegrass.

consider signing-up for a free "watercheck" that can assist you in determining your appropriate watering schedule.

AERIFICATION (CULTIVATION)

Core aerification or aeration can help reduce soil compaction, soil layering, and thatch. Adequate space between soil particles allows air, water and roots to penetrate. Compaction can lead to thinning lawns, weed and thatch development, and general dieback. This is especially true for Utah's common fine-textured clay and loam soils, which can become easily compacted. The UPPDL receives many samples where sod was placed on top of heavy clay soils, which can inhibit root growth and water penetration, negatively impacting the sod.

Core aeration with hollow core tines can help reduce soil compaction and layering. Effective aeration should yield from 15 to 30 cores per square foot. Aeration should be done when the cool-season grasses are actively growing, typically spring or late summer/early fall. Aerate home lawns once or twice per year, depending on soil texture, thatch depth and level of lawn use (heavy use, moderate use, or light use).

MOWING

Mowing is the most basic lawn-care practice, but it should not be taken for granted. A properly mowed lawn can help

continued on next page

Gone Turfing, continued from previous page

reduce stress. Mowing height recommendations fall between 2 and 3½ inches, with the longer height typically resulting in a more stress-resistant turf.

Do not remove more than 1/3 of the grass blade length in one mowing. This may require frequent mowing in the spring. For example, to mow to a height of 3½ inches, mow when the grass reaches 5¼ inches. Removing too much of the grass blade per mowing can stress plants and cause piles of grass clippings, which can smother some sections of turf. Always cut with a sharp blade, as dull blades can tear leaves. Blades can be maintained monthly to assure a sharp edge.

THATCH MANAGEMENT

Thatch occurs when the organic materials cannot be broken down quickly enough, causing a mat-like build-up. It is composed of living and dead turfgrass stems, stolons, and rhizomes that occur just above the soil level. When grass is properly mowed, clippings do not create thatch.

Thatch development is promoted by:

- vigorously growing/high lignin-producing turf varieties
- over-fertilization (especially in spring)
- frequent and short-duration irrigation
- compacted/layered soils
- heavy, wet soils
- low soil pH
- fungicides and insecticides that limit micro-organism or earthworm function

Thatch over ½-inch in depth can be detrimental to a lawn, creating harborage for fungal pathogens and arthropods and reducing cold, heat, and drought tolerance. Thick thatch can also prevent effective penetration of pesticides and fertilizers. And finally, a lawns with a thick thatch layer can become easily water-stressed, leading to randomly distributed dry patches.

To manage thatch, try the following:

- Apply balanced fertilizer based on turf needs (soil test).



A thick layer of thatch between the soil and the crown of the grass plants will prevent healthy turf growth.

- Select turf cultivars that do not produce heavy thatch.
- Promote deep rooting by watering deeply and infrequently.
- Minimize the use of turf fungicides and insecticides.
- Remove thatch with a rake, mechanical de-thatcher, vertical mower, or power rake.
- Top-dress turf with a compatible soil or organic material and rake or core aerate into turf.
- Core aerate in the fall (mid-August – mid-September) or spring (March-May) when grass is actively growing.

Techniques that might reduce turf density or create stress are best done in the late summer or early fall when the turf is actively growing. Spring is also acceptable, however weeds may become more of a problem after aggressive cultivation in the spring.

-Ryan Davis, Arthropod Diagnostician

Overseeding to Minimize Turf Diseases

When it comes to managing summer patch, necrotic ring spot, and thick thatch issues, creating a genetically diverse lawn is the primary long-term control strategy. Overseeding is a relatively easy process, but there are some issues to consider. Following are tips for overseeding to create a more disease-resistant lawn.

PREPARATION FOR OVERSEEDING

- Conduct a soil test on the area to be overseeded.
- Correct the soil fertility and physical turf/soil issues prior to overseeding (fertilization, compaction, layering, pH, salt issues, etc.).

continued on next page

Turf Overseeding, continued from previous page

- Consider sun/shade exposure, soil texture, thatch, compaction, drainage, lawn usage, soil amendments, etc.
- Avoid most pre-emergent herbicides and broadleaf weed killers one month prior to overseeding and within 4 to 6 weeks after overseeding.

SELECT THE PROPER TURF CULTIVARS

Determine current grass type and select a mix of cultivars that closely match its appearance. (*Recommendations from "Renovating the Home Lawn," by Koski and Wilson, CSU.*)

It is ok to overseed:

- Perennial ryegrass into Kentucky bluegrass
- Fine fescue into Kentucky bluegrass
- Newer turf-type tall fescues approach Kentucky bluegrass in appearance and may be overseeded into Kentucky bluegrass

Do not overseed:

- Standard tall fescue or older tall fescue cultivars into Kentucky bluegrass
- Buffalograss into Kentucky bluegrass, ryegrass, or tall fescue
- Kentucky bluegrass, tall fescue, or ryegrass into buffalograss

Turfgrass Cultivars with Summer Patch and Necrotic Ringspot Resistance

- | | |
|-----------------|---------------------|
| 1. Midnight | 7. Rugby II |
| 2. NuDestiny | 8. Ginney II |
| 3. EverGlade | 9. Jump Start |
| 4. Everest | 10. America |
| 5. Award | 11. Blue Velvet |
| 6. Granite Seed | 12. Quantum Leap SP |
- Company's Corsair

SEEDBED PREPARATION

1. Over a few cuttings, lower lawn height to around 1 to 1 ½ inches, and bag and remove clippings.
2. De-thatch if thatch is greater than ½-inch deep (remove thatch debris before overseeding).
3. Expose soil via core aeration, vertical mowing or power raking.
4. When core aerating, aerate heavily, 3 to 5 times in opposing directions, to expose soil for seed contact and improved germination.
5. Top-dress (cover lawn with half-inch of organic material).
6. Avoid soluble fertilizers or over-fertilization prior to overseeding.

OVERSEED WITH A DROP OR ROTARY SEEDER (OR USE A SLIT-SEEDER)

Apply seed at half the total rate in one direction and the other half in an opposing direction. Work seed through existing grass via watering or raking.

Overseeding rates per 1000 ft² of lawn

- turf-type tall fescue: 4 lbs
- Kentucky bluegrass: 1.5 lbs
- fine fescue: 2.5 lbs
- perennial ryegrass: 3.5-5 lbs

WATERING

Water lightly every day or multiple times per day if conditions are hot and dry, until seeds germinate. Do not let seedlings dry out. Continue to water frequently until new seedlings have established, then begin to incrementally cut back to recommended watering rates (i.e., deep and infrequent).

MAINTENANCE

- Fertilize 4 to 6 weeks after germination.
- Let new grass grow to 3 inches, and then cut to 2 inches. Maintain this height until dormancy if renovations were made in the fall.

The optimal time to overseed turf is between mid-August and mid-September. Overseeding between March and April will also work. Avoid overseeding during periods of extreme heat and drought because this could cause new seedlings to fail and could open up lawns for weed invasion.

-Ryan Davis, Arthropod Diagnostician

Turf Resources:

- Beddes, T. and Kopp, K. 2012. Lawn Fertilizers for Cool Season Turf. Utah State University Extension.
- Brown, D. and Taylor, D. Thatch Control in Lawns and Turf. University of Minnesota Extension.
- Goodspeed, J. Turfgrass Watering. Utah State University Extension, Weber County.
- Kopp, K. and Johnson, P. 2012. Turfgrass Cultivars for Utah. Utah State University Extension.
- Kopp, K., Allen, N. and Beddes, T. 2013. Simple Sprinkler Performance Testing for Cache County. Horticulture/Turfgrass/2013-04pr. Utah State University Extension.
- Kopp, K. and Johnson, P. 2011. Turfgrass Cultivation (Aerification). Fact Sheet, March. Utah State University Extension.
- Koski, A.J. and Wilson, C., 2014. Renovating the Home Lawn. Fact Sheet No. 7.241. Gardening Series, Yard. Colorado State University Extension.

"The Other" Raspberry Cane-Borers

Several articles about Utah research on the most common raspberry cane-borer, raspberry horntail, have appeared in previous Utah Pests News editions (summary in [Fall 2014 Utah Pests News](#)). This will be the first article addressing two other common cane-borers: raspberry crown borer and rose stem girdler. In a survey of raspberry fields this spring and summer, Dr. Claudia Nischwitz is finding canes killed by the raspberry crown borer in numerous locations in Utah.

THE RASPBERRY CROWN BORER is a day-flying clearwing moth that mimics a yellow jacket to ward off predators. It has a two-year life cycle. In year one, mature larvae in crowns develop into pupae, and then adult moths before emerging in late summer. Moths mate and females lay eggs on lower leaves of canes. Newly hatched larvae tunnel into the base of canes to spend the winter. In year two, larvae tunnel into the crowns and upper roots to feed in cambial tissues. This is when rapid wilt of canes occurs. Infested canes become spindly and break off easily at the crown. Upon inspection, tunnels and sawdust-like frass can be observed.

Primary management strategies are to:

- only plant clean nursery stock
- don't transplant canes between fields
- dig, remove, and destroy infested crowns/roots
- monitor infestations by looking for brittle/wilted canes and enlarged crowns
- apply insecticides as a full drench/soak to the base of crowns for more than 2 consecutive years:
 - o in mid-October to target first-year larvae
 - o in spring, before bud break, to target overwintered larvae before they tunnel deep into crowns/roots; protect pollinators, don't spray when bloom is available
 - o effective insecticides include bifenthrin (Brigade, Capture), chlorantraniliprole (Altacor), diazinon, and pyrethrin (organic)
 - o for home gardens: carbaryl (Sevin), acetamiprid, azadirachtin, or malathion

THE ROSE STEM GIRDLER is a copper-colored flatheaded beetle. Adults emerge from canes in May to June. The larva is white with a flattened head and two short spines on its tail. The tunneling larva forms 2-5 spiral grooves in the cambium of the mid-section of the cane, just under the bark. The cane is swollen at the girdling site, and often breaks, revealing a hollow pith. First-year (vegetative) canes are the most susceptible to attack. A primary source of rose stem girdler is nearby roses; wild and climbing roses are excellent hosts for the beetle.



The raspberry crown borer adult is a day-flying moth. Females lay eggs on the undersides of leaves or on the canes, in late summer.



Raspberry crown borer-infested crowns.

Management strategies for rose stem girdler include:

- remove nearby roses (wild and cultivated), or avoid planting raspberries near roses
- prune out and destroy infested canes in spring and summer to remove larvae
- apply insecticides just after bud break to kill adults and prevent egg-laying
 - o apply a full cover spray to canes; don't spray when bees are active
 - o effective insecticides include bifenthrin (Brigade, Capture), esfenvalerate (Asana), fenpropathrin (Danitol), zeta-cypermethrin (Mustang Max), diazinon, malathion, and pyrethrin (organic)
 - o for home gardens: same products as for raspberry crown borer (above)

Be proactive with good sanitation and pruning practices, and don't let raspberries cane-borers short-change your berry harvest.

-Diane Alston, Extension Entomologist

Invasive Pest Alert: Brown Marmorated Stink Bug

The brown marmorated stink bug (BMSB; *Halyomorpha halys*) is an invasive insect that is native to Asia and is a severe threat to fruits, vegetables, and some field crops (e.g., corn). It was first detected in Utah in 2012 and has since been collected in Salt Lake and Utah Counties. In previous years, only adults were found, but in our summer 2015 surveys, dozens of nymphs and a few egg masses have been found on catalpa trees in Salt Lake City.

Please note that there are other stink bugs in our region that can be mistaken for BMSB, some of which are beneficial predators. If you find a stink bug adult or nymph that you suspect might be a BMSB, place the insect into a spill-proof vial containing alcohol (rubbing or other) or white vinegar. Indicate on the bottle or accompanying letter where and when you collected the insect, and include your contact information in case we have follow-up questions.

Secure the sample using packing material to avoid breakage or damage, and mail the sample to:

Lori Spears
 Utah Plant Pest Diagnostic Laboratory
 Utah State University
 5305 Old Main Hill
 Logan, UT 84322

For more information about BMSB, check out USU's [Brown Marmorated Stink Bug](#) website.



Brown marmorated stink bug adults are shield-shaped, mottled brown, have banded antennae, and are about 5/8-inch long and 3/8-inch wide.



Brown marmorated stink bug egg masses occur in clusters of 20-30 eggs. Newly hatched nymphs have yellow-red abdomens and huddle around the egg mass.



Older stink bug nymphs darken in color and disperse from the egg mass.



Catalpa has been found to be a common host tree associated with brown marmorated stink bug.

Aphids Aplenty in Alfalfa

As predicted, aphids were major pests of alfalfa in spring 2015. What was not expected was how early their infestations would show up, how widespread they would become, and how mixed the management results would be.

The consistently warm early months of 2015 played a big role with aphids getting a head start. USU Extension faculty in Weber, Juab, and Sevier counties, and an industry representative from Bayer all reported that aphids were increasing in abundance beginning in mid-March. Even though alfalfa green-up was a couple of weeks earlier than “normal” this year, alfalfa plants were infested beyond the allowable aphid thresholds for alfalfa. Some fields had severely stunted plants and yellowed and wilted leaves. The first-cut yields from these fields were lost, and the re-growth is highly variable.

A complex of aphid species was identified, including cow pea aphid, pea aphid, and the most damaging: blue alfalfa aphid. It is important to note that these aphids are not new to the region and are commonly found in alfalfa, just not at the abundances that were found this year. Although there are aphid-resistant varieties available, alfalfa plants have a low tolerance for blue alfalfa aphids’ salivary toxin. For a couple of years now, much of the damage from blue alfalfa aphid has been seen throughout the region. Last year, the issues with blue alfalfa aphid appeared to be isolated to southern Utah, as USU Extension Iron County was one of the first to deal with the aphids in Utah.

Current Blue Alfalfa Aphid Thresholds

1 aphid / stem for seedlings

10-12 aphids / stem for plants 10" or less

40-50 aphids / stem for plants 10-20"

50 aphids / stem for plants 20" or more

Earlier this year, several attempts were being made to suppress aphid populations in a variety of ways, including conservation of predators, use of traditional insecticides, and the use of the newly registered butenolide insecticide, Sivanto.



The left image shows an alfalfa field treated with Sivanto, except for one strip where the grower ran out of product and applied Cobalt (chlorpyrifos and lambda-cyhalothrin). The right image shows the yellowed, stunted, and wilted plants.

James Barnhill (USU Extension-Weber Co.) took samples to estimate yield in Sivanto treated and untreated areas of the field and found about a 1.21 ton per acre yield loss in untreated areas of the field.



In addition to blue alfalfa aphid, other aphids were also damaging in spring 2015, including the cowpea aphid, which usually is not as abundant.

In many cases, the predator abundances lagged behind and the aphid damage outpaced predator arrival and reproduction. It was clear that predators like lady beetles and more specialized aphid parasitic wasps were responding to aphid populations as their abundance were quite high in some areas, but it appeared to be a little too late, particularly for the first cut.

Growers that applied pyrethroids or organophosphates did not see much improvement over predators alone, even with repeated applications. These traditional classes of insecticides only reduced aphid populations by approximately 50%.

continued on next page

Aphids in Alfalfa, continued from previous page

It was clear that the demand for the newly registered Sivanto was very high, but unfortunately, this product was in short supply in 2015. Where it was used, Sivanto excelled at suppressing aphids to approximately 90%, and matched results from previous efficacy trials conducted in California and Idaho. There were some growers that had mixed results with Sivanto, however, it is not clear whether initial applications of the traditional products that negatively affect predators and parasitoids may have contributed to the unfavorable management.

It is thought that Sivanto conserves predators, in part because of its systemic activity, and that the combination of insecticide and beneficial insects provides the best suppression, but more trials are being conducted to determine whether this is the case.

A variety of possible factors have been suggested for the resurgence of these aphid species. This includes changes in weather patterns, pesticide efficacy, and predator abundance, and more pesticide use for weevil resulting in a reduction in predators and parasitoids that feed on aphids. It appears the aphid issues in alfalfa are going to be with us for some time, given that they have not let up in Arizona and California where the problem has persisted for several years now.

Efforts are being made in the region to re-evaluate aphid thresholds in alfalfa and to test the efficacy of aphid management tactics.

-Ricardo Ramirez, Extension Entomologist

GENERAL IPM INFORMATION, continued

Be an Informed Pest Management Consumer

When "do-it-yourself" is not an option, then a professional landscape pest management company will need to be selected. They have the training and experience to offer various methods of control, but customers should be savvy about choosing one, and be educated about what is needed. Selecting a pest control service is just as important as selecting a doctor or lawyer.

VERIFY A CURRENT LICENSE

Anyone who applies pesticides as a business must hold a pesticide applicator's license. The Utah Department of Agriculture and Food (UDAF) issues these licenses. Periodic recertification is required. All the licenses for the owner and employees should be up to date.

ASK ABOUT THE PROPOSED TREATMENT

When a pest control company visits a site, they should inspect the premises and outline the extent of the problem and which pests need to be controlled. (And a good pest control company will outline ways to minimize the same pest problems in the future.) When discussing control options, ask what active ingredient will be used to treat the pest, and how it will be applied. The company should honor any requests for organic or low-toxic options, or recommend another business if necessary. Regardless of the product to be used, the applicator should provide instructions to reduce human, animal, or bee exposure to the pesticide.

CONDUCT A BACKGROUND CHECK

A pest control company should not be selected based on price, coupons, or the least of which, an unsolicited sales pitch. Online reviews or neighbors and friends will provide a better insight on dealing with the company. Furthermore, UDAF may have records of any company complaints. An affiliation with a professional association—national or regional—signals the company's concern for quality. These organizations keep members informed of new developments in pest control methods, safety, training, research, and regulations. Often, members agree to honor a code of ethics.

ASK ABOUT INSURANCE

Most contractors carry liability insurance, including insurance for sudden and accidental pollution. This provides a certain degree of protection should an accident occur while pesticides are being applied. Although commercial liability insurance is not required for businesses operating in Utah, hiring a company that is not insured is risky.

EVALUATE THE RESULTS

Inspect the treated plants a week or so after application. Ideally, the entire experience should have a positive outcome, but if something appears to have gone wrong, the company should be contacted immediately.

-Marion Murray, IPM Project Leader

Herbicide Damage on Vegetables

Glyphosate (ingredient in Round-Up and others) causes yellow banding on onions (at right) and affects the basal end of new tomato leaves.



Every year, numerous vegetable samples come to the Utah Plant Pest Diagnostic Lab that have been unknowingly damaged by an herbicide. There are several ways for herbicides to accidentally affect vegetables.

First and most common, is herbicide drift through direct contact of volatilization on a hot day. Weeds may be sprayed with herbicides several feet away from the vegetables but even the slightest breeze can move enough product or fumes to cause significant damage. A second possibility is the application of herbicides on the top of a slope—even a very slight one. Rain or irrigation water will move the herbicide down the slope and into the vegetables.

Third, and most difficult to assess, is the introduction of herbicides into the vegetable garden through compost or manure. Some herbicides break down very slowly, and may be active for several months. Degradation of herbicides depends on environmental conditions such as temperature. If weeds that are killed by herbicides are added to compost, the herbicide can still be present long after the weeds have decomposed. Herbicides are introduced into manure when cattle or horses feed on pastures or hay treated with herbicides. The herbicides will not affect the animals and move straight through their digestive system without being broken down.

Lastly, herbicide damage can be caused when the same sprayer is used for herbicides and other pesticides like insecticides or fungicides, and is not cleaned properly between treatments. It is always best to have a separate sprayer just for herbicides to avoid contamination.

The most common herbicide causing damage is glyphosate, the active ingredient in Round-up and other products. On



Aminopyralid is an herbicide ingredient that causes severe malformation of shoots, especially on tomato, pepper, and potato.

onions, glyphosate drift causes a yellow banding on the leaves, whereas on tomatoes, the basal end of new foliage initially turns white. Once the leaves get older, the white areas turn brown and dry up.

Sometimes herbicide damage may affect different vegetables differently. For example, aminopyralid causes severe damage of vegetables especially solanaceous ones like tomatoes, peppers or potatoes. It is the active ingredient in products such as Milestone and is frequently introduced in composted manure. On solanaceous plants, as little as one part per billion (1 ppb) causes severe damage in tomatoes, peppers and potatoes. Yet on squash and other cucurbits, damage is not seen until 300 ppb is reached. This discrepancy may mislead a grower into thinking the cause for the distortion is a disease.

-Claudia Nischwitz, Plant Pathologist

In the National News

WALNUT AROMAS TO CONTROL PESTS

Two pests of walnut—codling moth and navel orangeworm—tend to lay eggs in damaged rather than intact nuts. Researchers from Spain and USDA Agriculture Research Service in California have begun a long-term collaboration to develop novel management options based on walnut aromatics. This first study identified 92 compounds, 8 of which are characteristic of damaged nuts. The discovery of these compounds will lead to future studies to develop a blend that is attractive to insects for environmentally safe control and monitoring options.

INTERACTION OF PHEROMONES AND TIMING

Entomologists from a University of Arizona-led team have found that many species of longhorned beetles use the same sex pheromone, which contradicts the previous idea of one pheromone per species. To determine how the individual beetle species could find each other for mating, they used a “rotating trap” that could separate beetles by the time of day they entered the trap. Focusing on 11 species, the researchers discovered that each species is looking for a mate not only at different times of the day, but also at different times of the year. Their research, published in the *Journal of Chemical Ecology*, provides a framework for understanding how insects that produce the same pheromone can interact.

VINEYARD HABITATS HELP BUTTERFLIES

For many years, Washington State University Extension has promoted sustainable pest management practices in vineyards, which include habitat plantings to attract beneficial predator and parasitoid insects. In a recent survey of butterfly species and population sizes, WSU entomologists discovered an unexpected benefit in these practices: an increase in butterflies. They found that in general, around 50 species of butterflies have declined in eastern Washington, but in vineyards that created native habitats of sage-steppe shrubs, the number of butterflies was four times greater than in conventional vineyards. This increase in butterfly numbers isn't directly beneficial to vineyards, but they have aesthetic appeal to people, are important pollinators, and are integral to a healthy ecosystem.

STUDY FINDS VERY FEW WILD BEE SPECIES POLLINATE MAJOR CROPS

A 3-year study, by 58 researchers worldwide, suggests that only 2% of wild bee species pollinate 80% of bee-pollinated crops worldwide. The study calculates the value of wild bee pollination to the global food system at \$3,000 per hectare of ag land, and states that wild bees' agricultural value is now similar to that of honey bees. The authors conclude that although the economic benefits are high, goals of conserving wild bees should also include an increase in biodiversity.

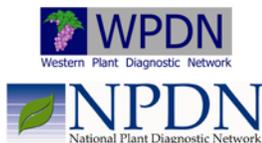
CLIMATE CHANGE AFFECTS MIGRATORY PESTS

The potato leafhopper feeds on many vegetable crops, causing millions of dollars in losses every year. It migrates to northern climates in spring in wind events. Entomologists in Maryland and New York examined six decades of data on leafhopper arrival dates and infestation. They found that they are arriving to eastern U.S. agricultural fields earlier than in the 1950s, by as much as 10 days. The results, published in *PLOS ONE*, indicate that agricultural systems should prepare for the effects of climate change on migratory pests.

ORIGIN OF WALNUT TWIG BEETLE REVEALED

The walnut twig beetle (WTB), which carries the fungus that causes thousand cankers disease, has become an invasive pest to walnut trees throughout much of the western and into the eastern U.S. The USDA Forest Service Pacific Southwest Research Station examined genetic variation in WTB and found that it descends from two geographically distinct genetic lineages in the southwest: western New Mexico, and the Madrean Sky Island region of Arizona and New Mexico. Researchers found evidence of hybridization of the two genetic lineages in specimens collected from outside this range. These results imply that the invasive WTB may in fact be a different species from the native Southwest WTB.

UTAH PESTS people and programs are supported by:



Utah State University is committed to providing an environment free from harassment and other forms of illegal discrimination based on race, color, religion, sex, national origin, age (40 and older), disability, and veteran's status. USU's policy also prohibits discrimination on the basis of sexual orientation in employment and academic related practices and decisions. USU employees and students cannot, because of race, color, religion, sex, national origin, age, disability, or veteran's status, refuse to hire; discharge; promote; demote; terminate; discriminate in compensation; or discriminate regarding terms, privileges, or conditions of employment, against any person otherwise qualified. Employees and students also cannot discriminate in the classroom, residence halls, or in on/off campus, USU-sponsored events and activities. This publication is issued in furtherance of Cooperative Extension work, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Kenneth L. White, Vice President for Extension and Agriculture, USU.