

# INSECT CONTROL IN THE LANDSCAPE - THE LATEST AND GREATEST



**UtahState**University  
COOPERATIVE EXTENSION



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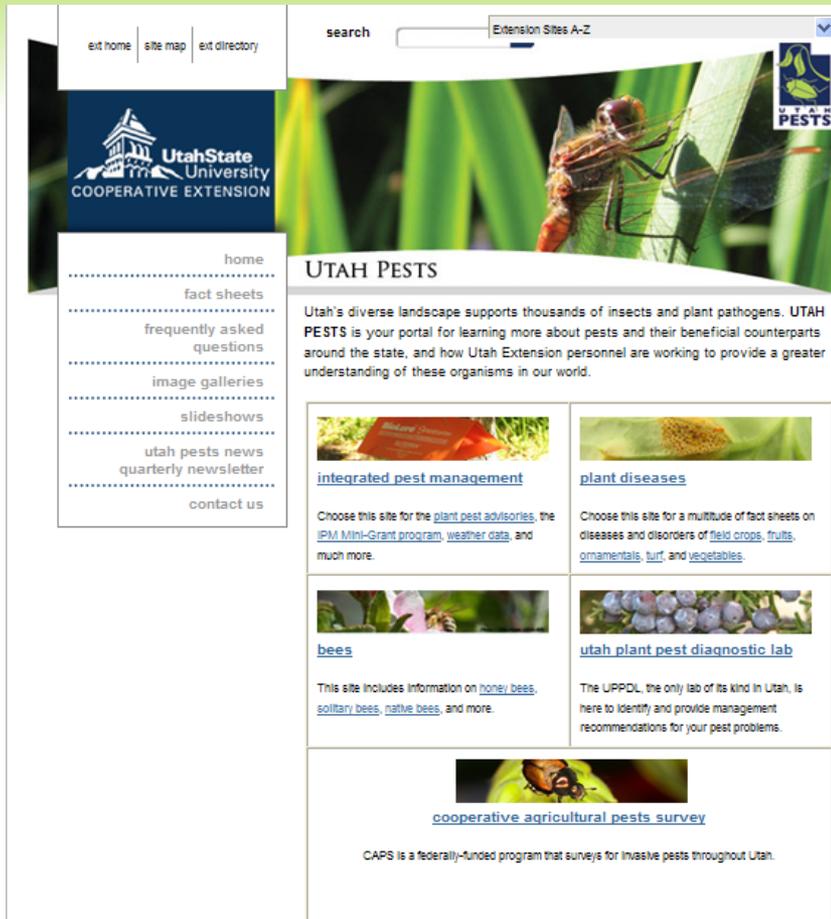
Facility and Grounds Management Expo  
Utah Valley University, Orem, UT  
July 14, 2011

# IPM (INTEGRATED PEST MANAGEMENT)

- ⊙ Sustainable
  - ⊙ Economic and Environmental
- ⊙ Integrated Pest Management Strategies
  - ⊙ Cultural (crop management)
  - ⊙ Mechanical
  - ⊙ Biological
  - ⊙ Chemical
- ⊙ Economic/Action Thresholds
  - ⊙ Treat only when needed



# UTAH PESTS ONLINE RESOURCES



The screenshot shows the homepage of the Utah Pests website. At the top left, there are navigation links: "ext home", "site map", and "ext directory". A search bar is located at the top center, with "Extension Sites A-Z" and a search icon. Below the search bar is a large banner image of a dragonfly on a green leaf, with the "UTAH PESTS" logo in the top right corner. The logo features a stylized leaf and the text "UTAH PESTS".

On the left side, there is a vertical navigation menu with the following items: "home", "fact sheets", "frequently asked questions", "image galleries", "slideshow", "utah pests news quarterly newsletter", and "contact us".

The main content area is titled "UTAH PESTS" and contains the following text: "Utah's diverse landscape supports thousands of insects and plant pathogens. UTAH PESTS is your portal for learning more about pests and their beneficial counterparts around the state, and how Utah Extension personnel are working to provide a greater understanding of these organisms in our world."

Below this text are four featured resource boxes:

- integrated pest management**: Choose this site for the [plant pest advisories](#), the [IPM Mini-Grant program](#), [weather data](#), and much more.
- plant diseases**: Choose this site for a multitude of fact sheets on diseases and disorders of [field crops](#), [fruits](#), [ornamentals](#), [turf](#), and [vegetables](#).
- bees**: This site includes information on [honey bees](#), [solitary bees](#), [native bees](#), and more.
- utah plant pest diagnostic lab**: The UPPDL, the only lab of its kind in Utah, is here to identify and provide management recommendations for your pest problems.

At the bottom of the featured resources is a box for **cooperative agricultural pests survey**. It includes an image of a person in a field and the text: "CAPS is a federally-funded program that surveys for invasive pests throughout Utah."

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

# FACT SHEETS

## Lilac-Ash Borer

Ryan S. Davis Arthropod Diagnostician  
Tawn Beddes Coache Co. Horticultural Agent  
Jay B. Karen Extension Entomology Specialist

### What You Should Know

- Lilac-ash borer (*Popillia syringae*), a clear-winged moth common in Utah, can be a destructive pest of many species of ash (*Fraxinus* spp.), privet (*Ligustrum* spp.), lilac (*Syringa* spp.), and related species.
- Adults emerge from host trees and lay eggs in the spring; larvae feed on wood within branches, overwinter in the heartwood, and emerge as adults the following spring.
- Diversifying species used in the landscape, maintaining optimum plant health, monitoring, and preventive sprays (if necessary) are the best methods for preventing infestations.
- Only preventive treatments exist. There are no insecticides registered that can eliminate borers once larvae are inside the plant.

### Description, Biology, and Habits

The lilac-ash borer (*Popillia syringae*), belongs to a group of insects known as the clear-winged moths. The wings of most asid moths have at least partially transparent wings ( devoid of the colored scales that coat most moth and butterfly wings). Many of them mimic bees or wasps and, unlike most moths, fly during the day.

Adult lilac-ash borers mimic the common paper wasp in color, size, shape, and flight habits (Fig. 1). Both the dark colored forewings and the transparent hind wings are narrow. The slender body is black in color with yellow banding on the abdomen. The wingspan varies from 1 to 1 1/8 inches. Females are somewhat larger than males.

Lilac-ash borers are generally distributed throughout the United States and Canada. They feed primarily in the trunks and larger limbs of lilac, ash, and privet, but occasionally attack related plants in the family Cleaceae. Significant damage in Utah has been reported from ash, primarily in European, blue, and green ash, and lilac.



Figure 1. Adult lilac-ash borer (*Popillia syringae*).

Depending on your location in Utah, adults may emerge from infested hosts as early as late March (usually late April) and continue until mid-July (at Females emit a pheromone (chemical communication signal), which attracts males for mating, with 14 days after emergence. Within an hour of mating females are able to lay the tan, elliptical eggs in crevices, and wounds in the bark. Eggs can be singly or in clusters. A single female can lay about 400 eggs. Eggs hatch within 14 days, and the larvae (larvae) bore into the plant (Fig. 2).

Initial feeding occurs just beneath the bark and it leads into the sapwood. Larvae continue feeding sapwood as summer progresses. Their tunnels (galleries) eventually turn upward and terminate just below the bark surface by the end of the season. Larvae enlarge their galleries as they grow, frequently excrete (poisonous-like excrement) out of the entrance. Complete galleries may be over 12 inches long 1/3 inch wide. Full grown larvae are about 1 inch and white with a brown head. Mature larvae overwinter in the heartwood.

In spring, a larva will cut an emergence hole in the bark, leaving a thin flap of tissue over the hole. It (formation of a cocoon) occurs in the tunnel. W

## Yellowjackets, hornets and paper wasps

Erin Hoagson Extension Entomology Specialist  
Alan Roe Insect Diagnostician

### What You Should Know

- Yellowjackets, hornets and wasps are closely-related social wasps commonly found in Utah.
- All social wasps are capable of repeatedly stinging without dying if they feel threatened.
- Bees are often blamed for most stings, but about 90% of all stings are likely caused by yellowjackets.
- Most social wasps are predatory of other insects and considered beneficial.
- Although providing natural insect control, social wasps can be considered nuisance pests when near humans.

Social wasps, including yellowjackets, hornets and paper wasps, are common stinging insects in Utah (Figs. 1, 2). The wasps are related to ants and bees, which are also capable of stinging; however, yellowjackets are the most likely to sting. Less than 1% of people are allergic to wasp or bee stings; however, some people are fatally stung every year. Nearly 80% of all serious venom-related deaths occur within one hour of the sting. Most people will only experience a mild local reaction with redness, pain, swelling and itching at the sting site. If symptoms are more serious, a physician should be consulted. Some people may develop venom sensitivity after repeated stinging episodes over a short or long period of time.



Fig. 1. Yellowjacket.



Fig. 2. Bald-faced hornet.

### Social Wasp General Description

- Have three well-separated body regions, a distinct waist and two pairs of clear wings.
- Care for their young and develop a caste system with different forms living together.
- Regenerate a new nest every year because only the queen overwinters; honey bee colonies overwinter together every year.
- Create their nests out of a wood and saliva paste.
- Capture prey with their legs and jaws and use stinging for defensive purposes only; this is different than solitary wasps that subdue prey with stinging (e.g., spider wasp).
- Go through complete metamorphosis (i.e., egg, larva, pupa, adult); adults and larvae have chewing mouthparts, and larvae are legless.
- Capable of multiple stings because they have "smooth" stingers; bees have barbed stingers (Fig. 3)



Fig. 3. Honey bee (left) and wasp (right) stingers.

## White grubs

Erin Hoagson Extension Entomology Specialist

### What You Should Know

- White grubs are the larval stage of scarab beetles.
- Several different kinds of white grubs are found in Utah.
- White grubs prefer to feed on turfgrass roots.
- Healthy turfgrass can mask white grub feeding.

White grubs are the most widespread and destructive insect pest of turfgrass. White grubs are the immature form of scarab beetles. There are several established white grub species in Utah, including masked chafers, May/June beetles, and the black turfgrass Ateuchus (Fig. 1). Most recently, Japanese beetles were detected in Orem, Utah, in 2006. These white grubs feed on turfgrass roots and are capable of causing significant economic damage. However, turfgrass can be successfully managed to prevent visible white grub damage with cultural control methods.



Fig. 1. White grubs are actually scarab beetles. Common scarab beetle adults are shown here (NOT TO SCALE).

### Damage Symptoms

White grubs chew off the turfgrass roots near the soil surface or just below the thatch layer. Early signs of white grub damage include grass wilting or yellowing; however, the initial feeding injury often goes unnoticed until brown patches of turf start to develop. White grub feeding damage can be most apparent in the late summer when grubs are nearly fully developed. Small patches of dying turf can quickly join together if grub density is extremely high.

Grub-damaged turfgrass becomes loosely attached to the soil as the roots are consumed. Heavily damaged turfgrass can feel spongy and easily pull away from the soil surface. Drought conditions can make turfgrass injury appear worse.

### Description

Adult scarab beetles are identified by size and color pattern. Adults range in size from 3/16 - 1" and can be tan, brown or black (Fig. 1). Scarab beetles are stout, oval-shaped, and have clubbed antennae. Adults have a pair of hardened forewings called elytra and a pair of membranous hindwings for flight. The first pair of legs are modified to help burrow in the soil to lay eggs. Some adults are nocturnal and are only active at night.

Many of the white grub species established in Utah look similar to each other but vary in size. Most white grubs range in size from 3/8 - 2". In general, grubs are C-shaped and have three pairs of thoracic legs (Fig. 2). The head capsule is dark, but the body is usually creamy white in color. While grub species identification is often not necessary because the cultural control practices are similar. The arrangement of hairs and spines on the posterior end of the grub, called the raster, is a distinguishing feature between species (Fig. 3).



Fig. 2. Common white grub body characters!

# PEST ADVISORY (INTEGRATED PEST MANAGEMENT)

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

Free subscription  
Timely info on pest  
activity

- insects
- mites
- diseases
- nutrient deficiencies
- environmental stress

Lots of images!  
IPM recommendations  
Effective pesticides

The screenshot shows the Utah State University Cooperative Extension website. The header includes navigation links like 'USU Links >> USU Home A-Z Index calendars MyUSU directory contact' and the 'UTAH PESTS Integrated Pest Management' logo. A secondary navigation bar lists 'UTAH PESTS Home', 'Integrated Pest Management', 'Plant Diseases', 'Bees', 'Utah Plant Pest Diagnostic Lab', and 'CAPS'. The main content area is titled 'Pest Advisories' and includes a search bar and a list of advisory categories: Fruit IPM, Vegetable IPM, Landscape IPM, Pest Advisories (with sub-links for Tree Fruit, Landscape, Small Fruit, and Turf), Fact Sheets, Image Galleries, Slideshows, Utah IPM & SA Mini-Grant Program, Pesticide Information, Weather Info, Resources and Links, and Contact Us. A featured article titled 'Ornamental Horticulture IPM' lists 'Landscape IPM Advisory', 'Tree Fruit IPM' (with sub-links for Tree Fruit, Plum Curculio Quarantine, and Insect Pest Biofixes), 'Small Fruit and Vegetable IPM' (with 'Small Fruit and Vegetable IPM Advisory'), and 'Turf IPM' (with 'Turf IPM Advisory'). A sidebar on the right contains a 'Subscribe to IPM Pest advisories HERE' button with a ladybug image and a tweet from @USUExtensionIPM dated '1 day ago' with the text 'Greater peachtree borers trapped in northern UT; leaf lower 18" of trunk of peachtree and apricot now. Start walnut hickory in July 18'.

# PEST DIAGNOSTICS

USU Links >> USU Home A-Z Index calendars MyUSU directory contact

**Utah State University**  
COOPERATIVE EXTENSION

**UTAH PESTS**  
Utah Plant Pest Diagnostic Lab



UTAH PESTS Home Integrated Pest Management Plant Diseases Bees Utah Plant Pest Diagnostic Lab CAPS

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\$7.00 Diagnosis  
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Alfalfa Hay Testing  
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**Current Pest Issues**  
Top 20 Insects  
Top 20 Arachnids  
Bed Bug Travel Tips



Utah's Top 20 Arachnids



Submit a Sample



Fact Sheets

Events

Jul 13, 2011  
**VIVA Vegetables:  
Green Beans**

Jul 16, 2011  
**Schooling Horse  
Show sponsored by  
Morgan Horse Club**

More Events...

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ext home • site map • ext directory

Utah Plant Pest Diagnostic Lab  
[utahpests.usu.edu/uppd/](http://utahpests.usu.edu/uppd/)

# IDENTIFICATION & CONTROL OF COMMON LANDSCAPE PESTS: WOODY ORNAMENTALS



# APHIDS



Woolly ash aphid

Symptoms:  
Curled leaves & shoots  
Sticky honeydew  
Black sooty mold



Rose aphid



Linden aphid

Small, soft-bodied  
Live in groups (colonies)  
Winged & non-winged  
“Tail pipes” (cornicles)

# APHID NATURAL CONTROL



Convergent  
Lady Beetle



Hover Fly



Green Lacewing



UF/Castner



# APHID MECHANICAL CONTROL

Stiff spray of water every 2-3 days  
until aphid numbers decline

Best if initiated before leaves are  
tightly curled



# APHID INSECTICIDES

- ⊙ Horticultural Oil (1%) (many brands)
- ⊙ Insecticidal Soap (many brands)
- ⊙ Imidacloprid (Merit, Bayer Advanced, generics)
  - ⊙ Systemic
- ⊙ Flonicamid (Aria)
  - ⊙ Antifeedant, Systemic
- ⊙ Pymetrozine (Endeavor)
  - ⊙ Antifeedant
- ⊙ Malathion

# SCALE INSECTS



European  
Elm  
Scale

Soft Scales



Lecanium  
Scale



Oystershell  
Scale

Armored Scales



Black  
Pineleaf  
Scale

# SCALE INFESTATION SYMPTOMS



Twigs & limbs encrusted in scale insect bodies

Chlorotic leaves

Necrotic spots on leaves & fruit



Limb dieback when scales are abundant

Soft Scales: honeydew (because feeding in tree phloem)

# SCALE MECHANICAL CONTROL

- ◎ Prune out infested limbs
- ◎ Place sticky bands to trap the young “crawler” stage
- ◎ Primarily a monitoring tool



Tangletrap & duct tape  
sticky band



Black pineleaf scale crawlers



San Jose scale crawlers

# SCALE INSECTICIDES

- ◎ Dormant Oil Spray (2-4%)
  - ◎ Spring – at bud break – smothers overwintering scales
- ◎ Systemic soil drench or injection
  - ◎ Spring (May)
    - Soft Scales – imidacloprid (Merit, Bayer Advanced, others)
    - Armored Scales – dinotefuran (Safari)
- ◎ Target Crawlers
  - ◎ June to July (varies with species; sticky bands to monitor)
    - Horticultural oil, insecticidal soap, Safari, pyriproxyfen (Distance), buprofezin (Talus), azadirachtin (Azatin, Neem oil), synthetic pyrethroids (Tempo, Talstar, others), malathion

# PLANT BUGS



Sycamore Plant Bug

- Symptoms:
- White & chlorotic stippling on leaves
- Leaf distortion
- Leaf holes
- Leaf drop



Honeylocust Plant Bug

# PLANT BUG MONITORING

Beating tray:

Shake limbs over a white or light-colored tray

Look for young plant bugs crawling on the tray

- green and brown
- narrow bodies
- long antennae
- can crawl quickly



# PLANT BUG INSECTICIDES

- ⊙ Target young (nymphs) – begin monitoring soon after new leaf growth begins
- ⊙ Insecticidal Soap
- ⊙ Horticultural Oil (1%)
- ⊙ Imidacloprid (Admire, Merit, Bayer Advanced, others)
- ⊙ Bifenthrin (Talstar, Tundra, others)
- ⊙ Permethrin (Aloft, Brigade, Pounce, others)
- ⊙ Carbaryl (Sevin)
- ⊙ Malathion

# DEFOLIATING INSECTS

Cankerworms



Tent  
Caterpillars  
and  
Fall  
Webworm



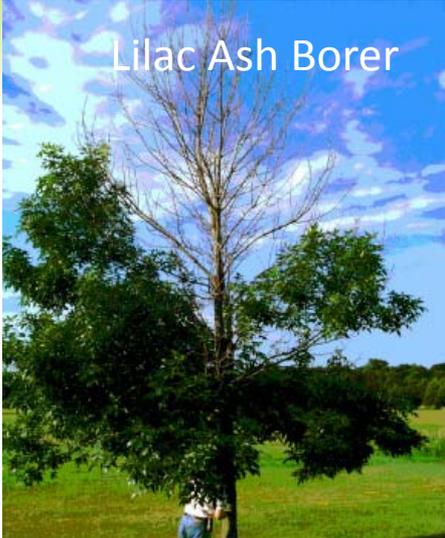
Elm Leaf Beetle

# DEFOLIATOR INSECTICIDES

- ◎ Bt (Dipel, Thuricide, others)
  - ◎ For caterpillars (moths) only
- ◎ Spinosad (Conserve, Success, Natural Guard, others)
- ◎ Imidacloprid (Merit, Admire, Bayer Advanced, others)
- ◎ Dinotefuran (Safari)
- ◎ Acetamiprid (Assail, Ortho Max)
- ◎ Diamide (Acelypryn)

# TREE BORERS

Lilac Ash Borer



Bronze Birch Borer



Peachtree Borer



Aspen Borer



Locust Borer



UGA2107046

ed (G. Mack) © 2013

# BORER INSECTICIDES

- ◎ Systemic trunk injections or soil drenches/injections
  - ◎ Merit, Admire, Safari, Acelypryn
    - Spring (May) – major flush of foliar growth
- ◎ Protective trunk sprays
  - ◎ Sevin, Permethrin, Bifenthrin, others
    - Timed with when adults are active; varies with borer species

# SPIDER MITES



Honeylocust  
Spider Mite



Spruce  
Spider Mite



Two Spotted Spider Mite



Symptoms:  
White & chlorotic stippling  
Webbing

# MITE MECHANICAL CONTROL

Stiff spray of water every 2-3 days  
until mite numbers decline

Initiate as soon as you notice stippling

Monitor:

White beating tray

- look for tiny mites crawling on the tray
- leaves tend to look “dirty”



# MITICIDES

- ⊙ Horticultural Oil (1%)
- ⊙ Insecticidal Soap
- ⊙ Etoxazole (Tetrasan) – mite growth inhibitor
- ⊙ Pyridazinone (Akari, Nexter, others) – reduces mite respiration
- ⊙ Acequinocyl (Kanemite, Shuttle, others) – reduces mite respiration
- ⊙ Bifenazate (Floramite, Acramite) – unknown MOA

# PEST PAPER WASPS

- ◎ Scavengers (eat live & dead insects) & sugar (fruit) eaters
- ◎ Social wasps - sting humans – nuisance pest
- ◎ European Paper Wasp (Invasive)
  - ◎ Upside down umbrella-shaped “paper” nests
  - ◎ More black than yellow color; narrow waist
- ◎ German Yellow Jacket (Invasive)
  - ◎ Nest in ground
  - ◎ Dominance of yellow color on black background = “yellow jacket”



# PAPER WASP NESTS



European paper wasp:  
Thin waist, more black than yellow,  
Upside down umbrella-shaped nests



German yellow jacket:  
“Chunky” body, more yellow  
than black  
Paper nests in ground &  
under dense vegetation  
More likely to sting/defend nest  
than other paper wasps

# WASP TRAPS

- ◎ Place around perimeter of fields, gardens, and yards and in spots slightly away from high human activity
- ◎ Yellow jacket – predator/scavenger
  - ◎ Commercial traps with heptyl butyrate bait
  - ◎ Homemade trap with raw meat
  - ◎ Locate ground nests in area - treat with insecticides & remove
- ◎ European paper wasp – fruit-eater
  - ◎ Homemade trap - liter plastic bottle with diluted fruit juice (1 part juice: 10 parts water) – ferment juice (1/4 tsp yeast) + 1/4 tsp liquid dish detergent
  - ◎ Treat & remove nests



# IDENTIFICATION & CONTROL OF COMMON LANDSCAPE PESTS: TURFGRASS



# TURFGRASS INSECT PESTS OF UTAH

- ⊙ Most destructive
  - ⊙ White grubs
  - ⊙ Subterranean sod webworm (AKA Cranberry girdler)
- ⊙ Most common
  - ⊙ Billbugs
  - ⊙ Common sod webworms



White grub



Subterranean sod webworm adult



Denver billbug adult

# CULTURAL PRACTICES TO PREVENT TURFGRASS INSECT PROBLEMS - KEEP THE TURF HEALTHY!

- ① Apply fertilizer in the proper amounts and at the right time
- ① Irrigate deeply and infrequently
- ① Mow grass at a height of 1 ½ in or higher
- ① Select a well-adapted turf variety
- ① Amend soil with organic matter
- ① Aerate and de-thatch as needed



Which thatch layer is sustainable?

# WHITE GRUBS

- ⊙ Immature stage of scarab beetles
- ⊙ Eat turfgrass roots
- ⊙ 3 kinds established in UT
  - ⊙ May/June beetle
  - ⊙ Masked chafer
  - ⊙ Black turfgrass Ataenius
  - ⊙ Japanese beetle – Orem eradication program



May/June beetle



Black turfgrass  
Ataenius



Masked chafer



Japanese beetle

Not to scale!

# WHITE GRUBS

- ◎ When mature, grubs range from 3/8 to 2 inches long
- ◎ C-shape when at rest
- ◎ 3-pairs of legs (obvious)
- ◎ Life cycle length
  - ◎ Several gens per yr – black turfgrass Ataenius
  - ◎ 1 gen per yr – masked chafer
  - ◎ 1 gen every 2-3 yr – May/June beetle
- ◎ Brown turf patches apparent in late summer
- ◎ Damaged turf feels “spongy”
- ◎ Turf pulls up easily from roots



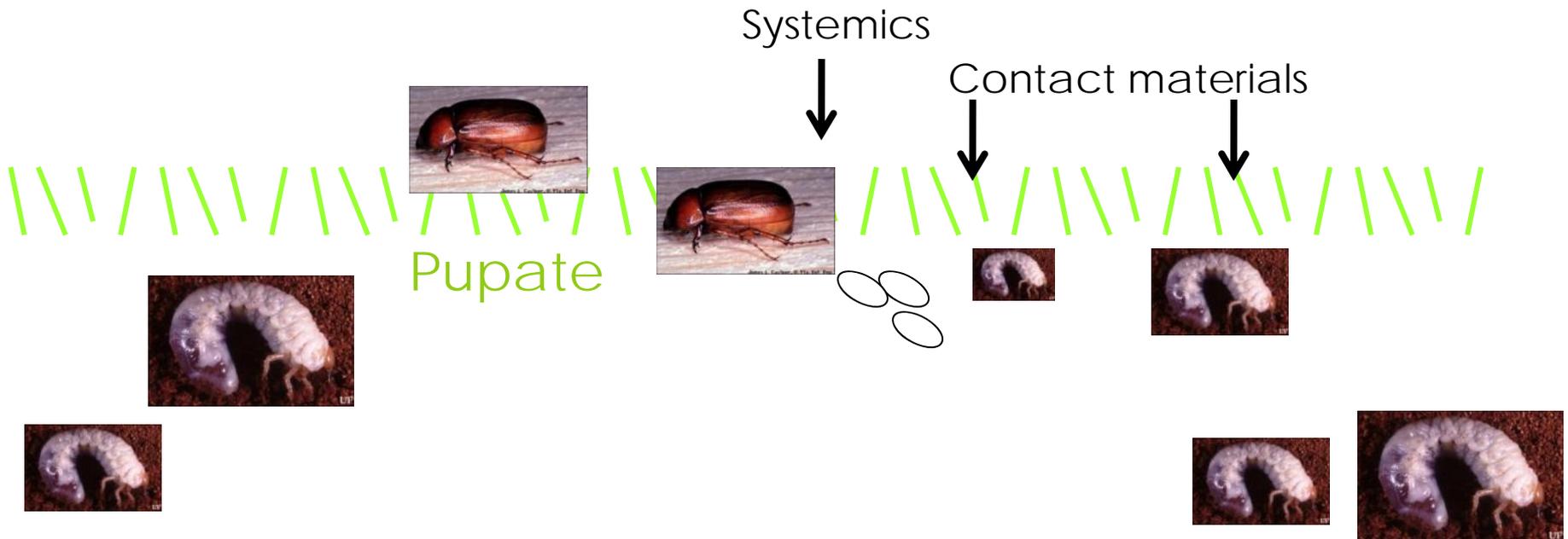
# WHITE GRUBS

## 1-3-YEAR LIFE CYCLE

Spring

Summer

Fall/Winter



Can spend 1-2 years as  
2<sup>nd</sup> to 3<sup>rd</sup> instar larva

2<sup>nd</sup>-3<sup>rd</sup> instars move  
3" to 12" deep for winter

# WHITE GRUB MANAGEMENT

- ⊙ Apply systemic insecticides in early summer before eggs hatch to allow adequate time for plant up-take
  - ⊙ Acelepryn (chlorantraniliprole)
  - ⊙ Arena (clothianidin)
  - ⊙ Merit (imidacloprid)
  
- ⊙ Apply contact insecticides in mid summer through early fall before the grubs move deeper in the soil zone to spend the winter
  - ⊙ Broad-spectrum
    - Dylox (trichlorfon)
    - Sevin (carbaryl)
  - ⊙ Selective, reduced-risk
    - Concern (azadirachtin)
    - Mach 2 (halofenozide)



# WHITE GRUB MANAGEMENT



Published by Utah State University Extension and Utah Plant Pest Diagnostic Laboratory ENT-104-07 March 2007

## White grubs

Erin Hodgson  
Extension Entomology Specialist

### What You Should Know

- White grubs are the larval stage of scarab beetles.
- Several different kinds of white grubs are found in Utah.
- White grubs prefer to feed on turfgrass roots.
- Healthy turfgrass can mask white grub feeding.

White grubs are the most widespread and destructive insect pest of turfgrass. White grubs are the immature form of scarab beetles. There are several established white grub species in Utah, including masked chafers, May/June beetles, and the black turfgrass Ataenius (Fig. 1). Most recently, Japanese beetles were detected in Orem, Utah, in 2006. These white grubs feed on turfgrass roots and are capable of causing significant economic damage. However, turfgrass can be successfully managed to prevent visible white grub damage with cultural control methods.



Fig. 1. White grubs are actually scarab beetles. Common scarab beetle adults are shown here (NOT TO SCALE).

### Damage Symptoms

White grubs chew off the turfgrass roots near the soil surface or just below the thatch layer. Early signs of white grub damage include grass wilting or yellowing; however, the initial feeding injury often goes unnoticed until brown patches of turf start to develop. White grub feeding damage can be most apparent in the late summer when grubs are nearly fully developed. Small patches of dying turf can quickly join together if grub density is extremely high.

Grub-damaged turfgrass becomes loosely attached to the soil as the roots are consumed. Heavily damaged turfgrass can feel spongy and easily pull away from the soil surface. Drought conditions can make turfgrass injury appear worse.

### Description

Adult scarab beetles are identified by size and color pattern. Adults range in size from 3/16 - 1" and can be tan, brown or black (Fig. 1). Scarab beetles are stout, oval-shaped, and have clubbed antennae. Adults have a pair of hardened forewings called elytra and a pair of membranous hindwings for flight. The first pair of legs are modified to help burrow in the soil to lay eggs. Some adults are nocturnal and are only active at night.

Many of the white grub species established in Utah look similar to each other but vary in size. Mature grubs range in size from 3/8 - 2", in general, grubs are C-shaped and have three pair of thoracic legs (Fig. 2). The head capsule is dark, but the body is usually creamy white in color. White grub species identification is often not necessary because the cultural control practices are similar. The arrangement of hairs and spines on the posterior end of the grub, called the raster, is a distinguishing feature between species (Fig. 3).



Fig. 2. Common white grub body characters<sup>3</sup>

page 1

- ⊙ Before applying insecticides, reduce thatch layer to  $\leq \frac{1}{2}$  in or aerate turf to increase penetration
- ⊙ Apply  $\frac{1}{2}$  to  $\frac{3}{4}$  in water to move insecticides into the root zone
- ⊙ Repeat irrigation every 4-5 days to continue chemical movement into the soil
- ⊙ Long-lasting clean-up of white grubs often requires several years of treatment

# SUBTERRANEAN SOD WEBWORM (AKA CRANBERRY GIRDLER)

- ⊙ Moth/caterpillar
- ⊙ Feeds in turfgrass crowns and roots
- ⊙ Injury looks similar to that of white grubs
- ⊙ Damage begins as small brown patches that can spread rapidly in the late summer to early fall
- ⊙ Persistent turfgrass pest along the Wasatch Front
- ⊙ Larvae are dirty-white to gray with an orange-brown head
- ⊙ Adults are buff-colored moths with brown and cream stripes
- ⊙ Moths fly just above the turfgrass at dusk/night in mid to late summer



# SUBTERRANEAN SOD WEBWORM MANAGEMENT



## Cranberry girdler

Erin W. Hodgson  
Extension Entomology Specialist

Alan H. Roe  
Insect Diagnostician

### What You Should Know

- Cranberry girdler is also known as the subterranean webworm.
- As the name implies, this webworm is more commonly found in turfgrass crowns and roots than above ground.
- Heavy larval infestations can kill grass, with peak turfgrass injury occurring in late summer and early fall.
- Keeping turfgrass properly irrigated and fertilized will minimize potential cranberry girdler damage.

Cranberry girdler, *Chytoseuonia topiaria*, can be found throughout the U.S., but is particularly damaging to turfgrass seed production areas in the Pacific Northwest. This insect was first detected in northern and northeastern Utah during the early 1980's. Larvae prefer cool-season grasses, such as Kentucky bluegrass, bentgrass and fine-leaf fescues. In addition to causing significant damage to turfgrass, it is recorded as a pest of other grasses, cranberry, Douglas fir, and true fir. Cranberry girdler can move from infested grasslands to seedlings grown in nursery plots. Damage to fir and coniferous trees consists of the removal of tissue from the surface of the taproot.



Fig. 1. Cranberry girdler damage on a Douglas fir seedling.

### Biology and Description

Although cranberry girdler eggs and pupae can be easily confused with other sod webworms found in turfgrass, larvae and adults are distinctive (Fig. 2). Adult webworms are known as "snout" moths because their mouthparts are projected forward and their wings are held tube-like around the body. Cranberry girdler adults are about 1/2" long and have a 1/2" wingspan. The front wings are buff-colored with brown and cream stripes, have three black spots near each wing tip, and have silver scales near the wing fringes. Males and females are active at night and normally fly low to the ground. Cranberry girdler larvae are dirty-white or gray in color with an orange-brown head and lack obvious markings like other sod webworms (Fig. 2). Mature larvae can reach 1/2" and are found in the thatch or soil.



Typical sod webworm larva Typical sod webworm adult

Fig. 2. Cranberry girdler can be distinguished from other sod webworms.

### Cranberry Girdler Life Cycle

The cranberry girdler goes through one generation per year. Adults emerge during mid-June and are actively flying for 4-8 weeks. After mating, females drop several hundred eggs per week on turfgrass blades. Eggs hatch in 8-11 days and young larvae burrow down into the thatch layer or upper soil layer to feed on crowns and roots. Larvae continue to feed and grow for about two months until near pupation. Cooler temperatures in October signal the pre-pupae to spin a tough silken tunnel in the soil and overwinter as dormant larvae.

- ⊙ Insecticides for white grubs are also effective for SSW
- ⊙ Also, bacterial insecticides kill larvae
  - ⊙ Deliver (*Bacillus thuringiensis* -Bt)
  - ⊙ Conserve (spinosad)
- ⊙ And pyrethroid insecticides kill larvae and adults
  - ⊙ Scimitar (lambda-cyhalothrin)
  - ⊙ Talstar (bifenthrin)
  - ⊙ Tempo (beta-cyfluthrin)

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