

# Turf Insect Management



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# Pest Management Resources on the Web

- Pest fact sheets & photos
- Pest management recommendations
- Answers to frequently asked pest questions
- Pesticide information
- Utah Plant Pest Diagnostic Lab  
(submit pest samples for id)
- Outreach education slideshows

# Pest Management Resources on the Web "Insects and Plant Diseases"

Utah Plant Pest Diagnostic Lab

One-stop shopping for Utah pest management information

EXTENSION  
**UtahState**  
UNIVERSITY

FAQ Photo Gallery

**Insects and Plant Diseases**

Integrated Pest Management

Delta Trap

Mormon Cricket

Apple Mosaic Virus

Insects and Their Relatives

Plant Diseases

Utah Plant Pest Diagnostic Lab

<http://extension.usu.edu/cooperative/ipd>

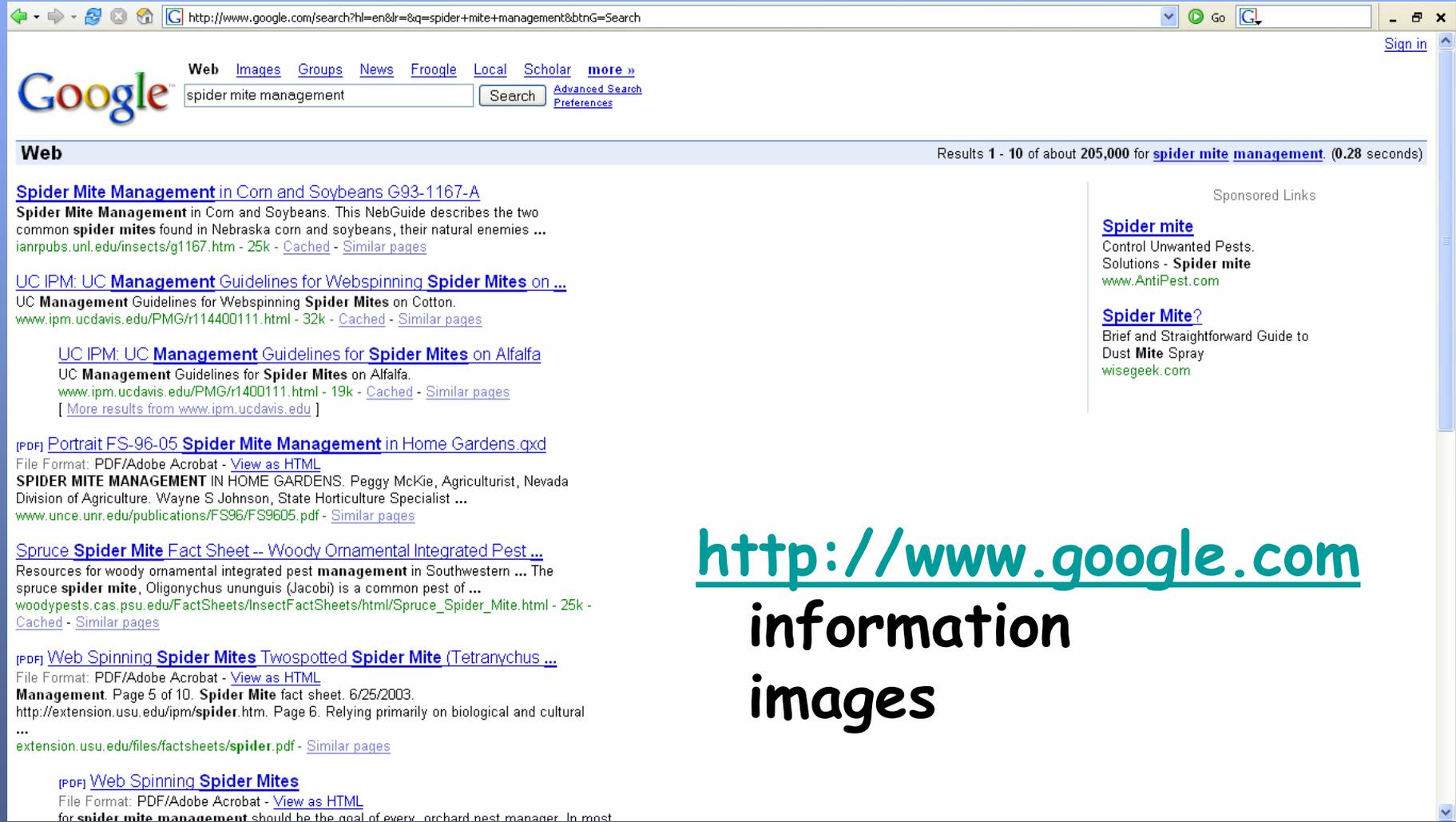
# Pest Management Resources on the Web "USU Extension Publications"

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Publications  
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Agriculture  
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# Search for Information on the Web "Google Search Engine"



The screenshot shows a Google search results page for the query "spider mite management". The browser's address bar displays the URL: <http://www.google.com/search?hl=en&lr=&q=spider+mite+management&btnG=Search>. The search bar contains the text "spider mite management" and a "Search" button. The page shows results for "spider mite management" with approximately 205,000 results found in 0.28 seconds. The results are categorized under "Web".

**Web** Results 1 - 10 of about 205,000 for **spider mite management** (0.28 seconds)

**Spider Mite Management in Corn and Soybeans G93-1167-A**  
Spider Mite Management in Corn and Soybeans. This NebGuide describes the two common spider mites found in Nebraska corn and soybeans, their natural enemies ...  
[ianpubs.unl.edu/insects/g1167.htm](http://ianpubs.unl.edu/insects/g1167.htm) - 25k - [Cached](#) - [Similar pages](#)

**UC IPM: UC Management Guidelines for Web-spinning Spider Mites on ...**  
UC Management Guidelines for Web-spinning Spider Mites on Cotton.  
[www.ipm.ucdavis.edu/PMG/r114400111.html](http://www.ipm.ucdavis.edu/PMG/r114400111.html) - 32k - [Cached](#) - [Similar pages](#)

**UC IPM: UC Management Guidelines for Spider Mites on Alfalfa**  
UC Management Guidelines for Spider Mites on Alfalfa.  
[www.ipm.ucdavis.edu/PMG/r1400111.html](http://www.ipm.ucdavis.edu/PMG/r1400111.html) - 19k - [Cached](#) - [Similar pages](#)  
[ [More results from www.ipm.ucdavis.edu](#) ]

**Portrait FS-96-05 Spider Mite Management in Home Gardens.qxd**  
File Format: PDF/Adobe Acrobat - [View as HTML](#)  
**SPIDER MITE MANAGEMENT IN HOME GARDENS.** Peggy McKie, Agriculturist, Nevada Division of Agriculture. Wayne S Johnson, State Horticulture Specialist ...  
[www.unce.unr.edu/publications/FS96/FS9605.pdf](http://www.unce.unr.edu/publications/FS96/FS9605.pdf) - [Similar pages](#)

**Spruce Spider Mite Fact Sheet -- Woody Ornamental Integrated Pest ...**  
Resources for woody ornamental integrated pest management in Southwestern ... The spruce spider mite, Oligonychus ununguis (Jacobi) is a common pest of ...  
[woodypests.cas.psu.edu/FactSheets/InsectFactSheets/html/Spruce\\_Spider\\_Mite.html](http://woodypests.cas.psu.edu/FactSheets/InsectFactSheets/html/Spruce_Spider_Mite.html) - 25k - [Cached](#) - [Similar pages](#)

**Web Spinning Spider Mites Twospotted Spider Mite (Tetranychus ...)**  
File Format: PDF/Adobe Acrobat - [View as HTML](#)  
**Management.** Page 5 of 10. **Spider Mite** fact sheet. 6/25/2003.  
<http://extension.usu.edu/ipm/spider.htm>. Page 6. Relying primarily on biological and cultural ...  
[extension.usu.edu/files/factsheets/spider.pdf](http://extension.usu.edu/files/factsheets/spider.pdf) - [Similar pages](#)

**Web Spinning Spider Mites**  
File Format: PDF/Adobe Acrobat - [View as HTML](#)  
for spider mite management should be the goal of every orchard pest manager. In most

**Sponsored Links**

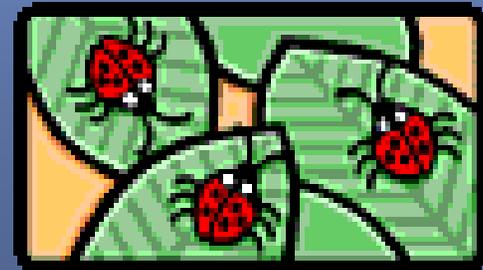
**Spider mite**  
Control Unwanted Pests. Solutions - **Spider mite**  
[www.AntiPest.com](http://www.AntiPest.com)

**Spider Mite?**  
Brief and Straightforward Guide to Dust Mite Spray  
[wisegeek.com](http://wisegeek.com)

<http://www.google.com>  
information  
images

# Integrated Pest Management IPM

- Plan ahead (use preventive strategies where possible)
- Accurate identification of problem
- Monitor regularly
- Treat only if needed (thresholds)
- Time treatments for “weak links” in pest life cycle
- Use multiple pest management tools
  - Cultural
  - Mechanical
  - Biological
  - Chemical
- Keep records
- Environmentally, economically, and socially sound



# Problem Diagnosis!

- Most plant health problems are not caused by biotic factors (pests: insects, diseases), but by abiotic factors (irrigation, environment, culture & care)



Lawn with dry area suggestive of sprinkler pattern problem

# Identification of Insect Problems



Look for type of injury:

Chewed leaves

Short stems

Stems break easily

Sawdust like frass

Look for presence of insect:

Fat caterpillars

Brown moths

Small, legless grubs

Large C-shaped grubs

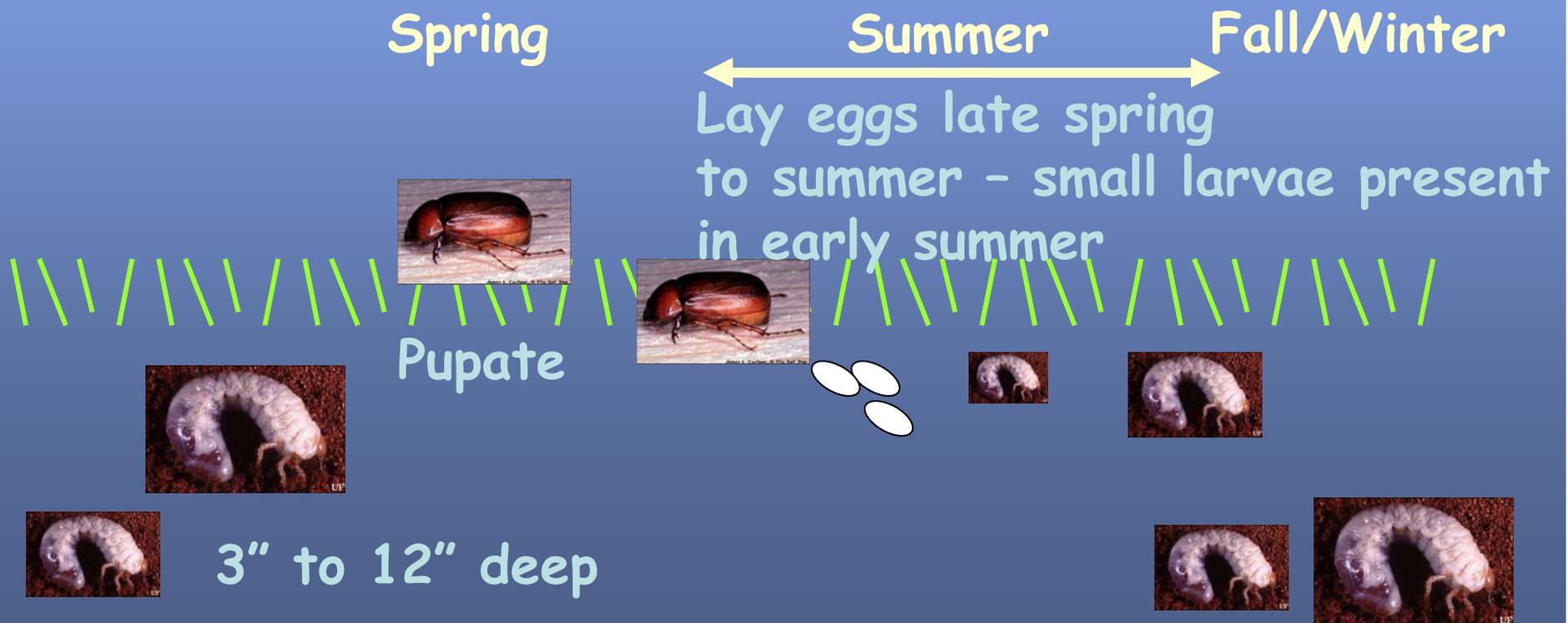
Spongy turf

"Turf roll-back"

Predator digging

# Time Treatments for "Weak Links" in Insect Life Cycle

White Grubs  
May & June Beetles



# Turf Cultural Care

- Good lawn care (fertilize, mow, aerate, irrigation)
- Amend soil (add OM)
- Select more tolerant turf species & varieties
- De-thatch



# Major Turf Pests

- **Surface / Thatch Feeders (leaf, stem):**

- Armyworm
- Cutworm
- Sod webworm
- Mites

- **Surface / Crown Feeders (burrow into stem, crown):**

- Billbug
- Subterranean webworm

- **Subsurface (root):**

- May & June beetles



# White Grubs

May and June Beetles (*Phyllophaga*)  
Black Turfgrass Ataenius (*Ataenius*)

- Scarab beetle family
- C-shaped white larvae
  - Brown head, legs
  - Eat roots
  - Turf roll-back
- 1-3 year life cycle



# White Grubs



## ■ Damage:

- Root feeding, plants wilt, yellow, thin
- Irregular dead patches
- Turf not anchored to soil, "turf roll-back"
- Invasion by broadleaf weeds
- Secondary damage from small mammals & birds
- Most feeding injury in spring to early summer and late summer to fall

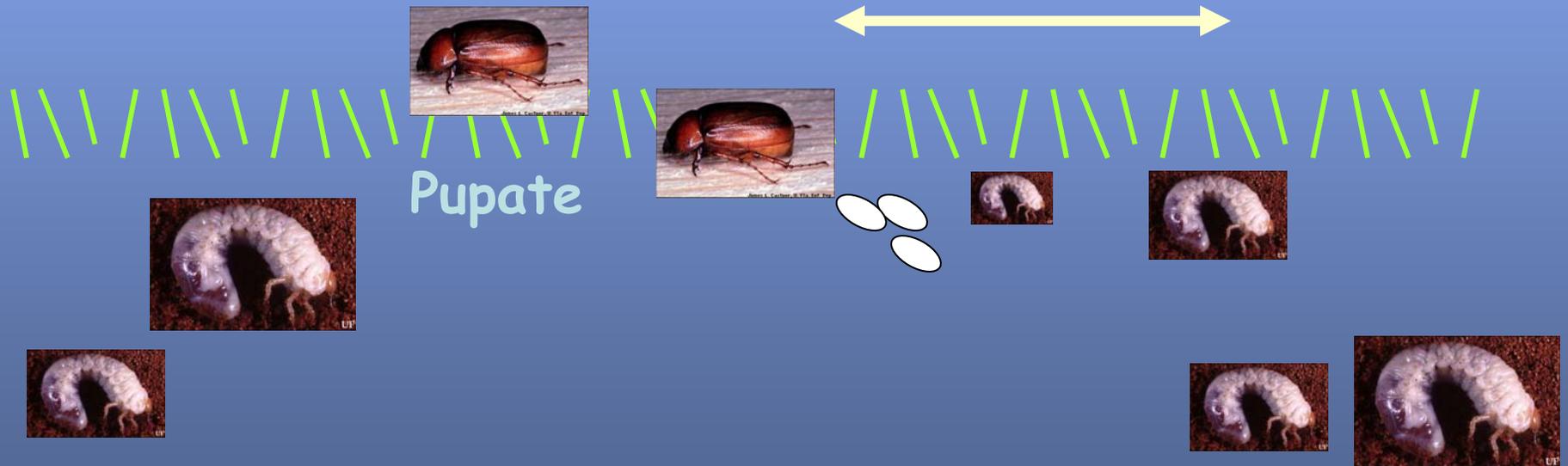
# White Grubs

## 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 Control

- Target small larvae (late spring-early summer)
- Target larvae before they dig deep for the winter (late summer to early fall)
- Threshold: 3-4 grubs/sq ft
- Irrigate to move materials to grubs in the upper root zone
  - Imidacloprid (Merit™)
  - Halofenozide (Mach 2™)
  - Carbaryl (Sevin™)
  - Chlorpyrifos (Dursban Pro™)
  - Diazinon
  - Trichlorfon (Dylox™)
  - Beneficial Nematodes - *Heterorhabditis bacteriophora* (Cruiser™), *Steinernema carpocapsae* (Scanmask™)
  - Fungus - *Beauveria bassiana* (Botanigard™, Naturalis™)



# Billbugs

(*Sphenophorus* spp.)

- Bluegrass & Denver Billbugs
- Weevil beetle family (snout)
  - Burrow in stems, crown
  - Small, legless larvae
  - Blades break at crown
  - Sawdust like frass
- 1 year life cycle



# Billbugs

## ■ Life Cycle

- Adults & larvae overwinter in turf
- Begin feeding in spring
- Eggs laid in stems (spring to summer)
- New adults in summer

## ■ Damage

- Larvae feed within stems, crowns
- Abundant frass
- Stems break easily at crown
- Dollar spots grow into larger patches



# Billbug Control

- Target small larvae (spring and early summer)
- Threshold: 20 larvae/sq ft
- Light irrigation to move materials into crown zone
- Resistant turfgrass varieties
  - Imidacloprid (Merit™)
  - Halofenozide (Mach 2™)
  - Scimitar™, Talstar™ & Tempo™ for adults
  - Chlorpyrifos (Dursban Pro™)
  - Carbaryl (Sevin™)
  - Beneficial Nematodes - *Heterorhabditis bacteriophora* (Cruiser™) & *Steinernema carpocapsae* (Scanmask™)
  - Fungus - *Beauveria bassiana* (Botanigard™, Naturalis™)



# Sod Webworms

- Lepidoptera (moth, caterpillar)
- Snout moths
  - Gray to brown caterpillars
  - Larvae feed on grass blades
  - Larvae form silken tunnels in thatch
  - Injury not as severe as grubs & billbugs
  - Gray to brown moths fly just above turf in zigzag pattern; especially near dusk
- 1-3 generations per year



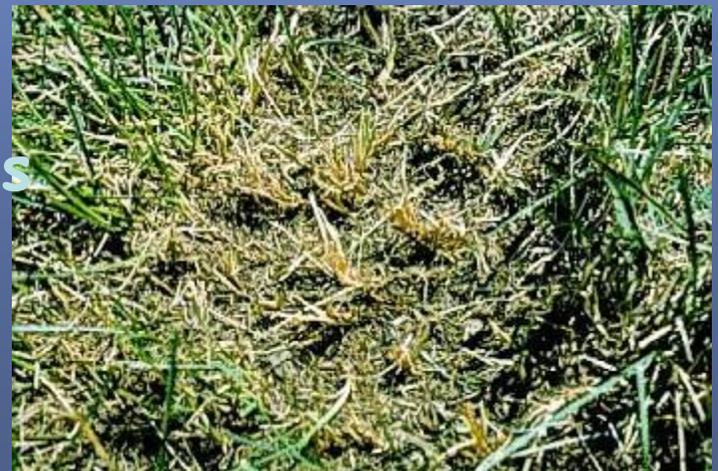
# Sod Webworms



## ■ Damage

- Larvae chew on leaves & stems at night or on cloudy days
- Cut off grass blades, drag into tunnels
- Small, irregular brown patches of closely cropped grass
- Green frass accumulates at crowns
- Secondary damage from birds pecking holes in turf

## ■ Larvae overwinter in silken tunnels



# Sod Webworm Control

- Target young larvae (late spring to summer)
- Threshold: 15 larvae/sq ft
- Increase mowing height
  - *Bacillus thuringiensis* (Bt) - must be ingested by small larvae
  - Spinosad (Conserve™)
  - Azadirachtin (Ornazin™)
  - Imidacloprid (Merit™)
  - Halofenozide (Mach 2™)
  - Scimitar™, Talstar™, Tempo™)
  - Acephate (Orthene™)
  - Carbaryl (Sevin™)
  - Diazinon
  - Chlorpyrifos (Dursban Pro™)
  - Beneficial Nematodes



# Cutworms & Armyworms

- Lepidoptera (Noctuid moths)
- Management is very similar to sod webworms
- Target young larvae
- Threshold: 5 larvae/sq yd



# Mites



- Banks Grass Mite
- Clover Mite
- Twospotted Spider Mite
  - Feed on leaves
  - Remove sap, chlorophyll
  - Cause speckling, silvering, bronzing
- Dry conditions, drought stress
- Spring to summer



# Mite Control

- Soap (1-2%)
- Stiff stream of water; irrigate
  - Dicofol (Kelthane™)
  - Bifenthrin (Talstar™)
  - Sulfur
- Predaceous mites

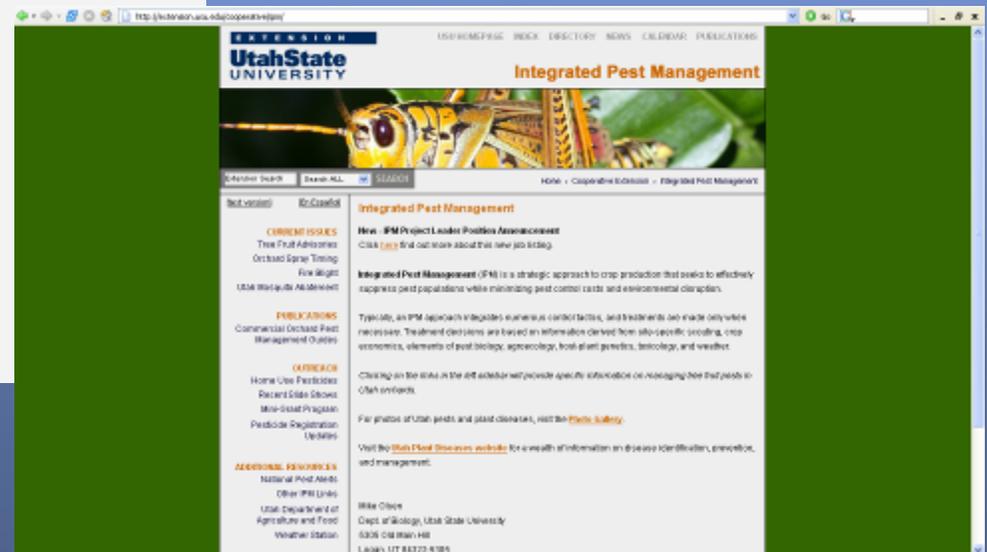
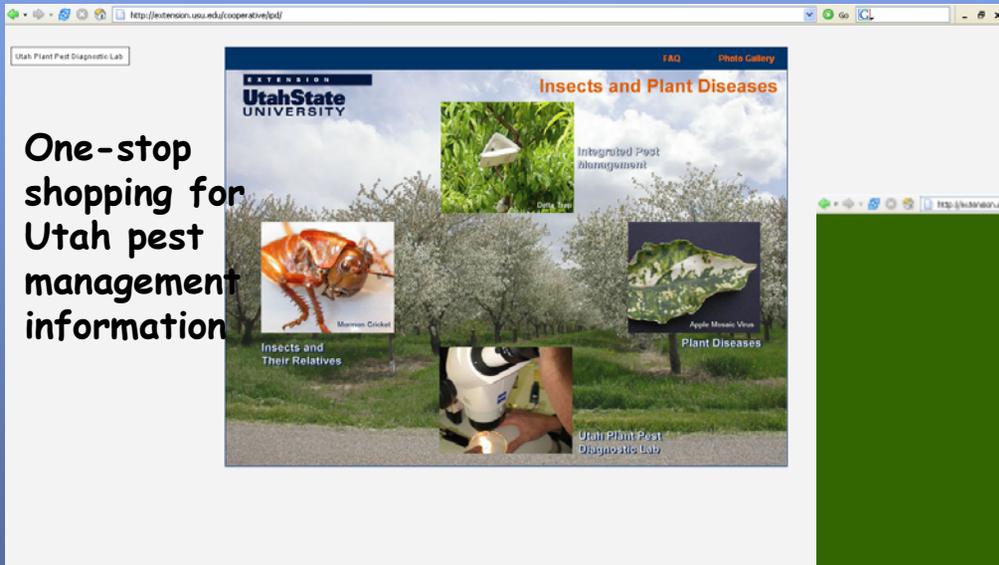


# USU Extension Pest Management Slideshows

## Where can you view this slideshow?

<http://extension.usu.edu/cooperative/ipd>

One-stop shopping for Utah pest management information



<http://extension.usu.edu/cooperative/ipm>

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[http://extension.usu.edu/cooperative/  
ipm](http://extension.usu.edu/cooperative/ipm)