What's Bug'n You ! TURFGRASS Insects

URBAN IPM TEAM
David M. Kopec
Univ. Arizona

WALHFMF
F. Baxendale Univ. Nebrska - Lincoln

Turfgrass Insects in Az

- Usually not a severe problem
- Certain insects will seek out well watered turfs
- May be invitation for other "turf damage"

PREPARATION
is
9/10's
of the Law

UNDERGROUND TURF FEEDERS

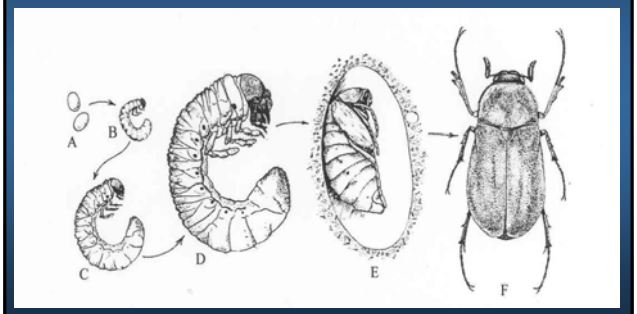
GRUBS !

White Grubs
(Coleoptera: Scarabaeidae)

- "C"-shaped larvae of scarab beetles
- Larvae reach a length of up to 5 cm (depending on species)
- White to tannish in color with brown head capsule, and six prominent legs

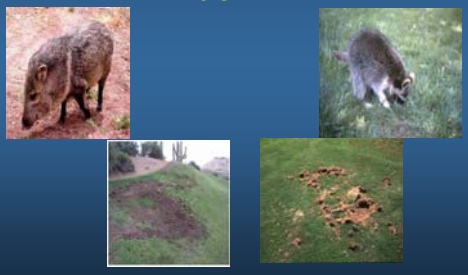
White Grubs

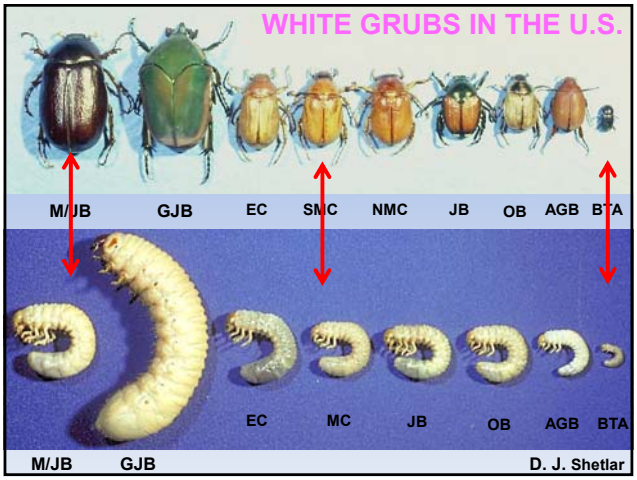
White Grubs
Complete Metamorphosis



White Grubs

- Damage from White Grubs
  - Indirect- Scavenging by Animals





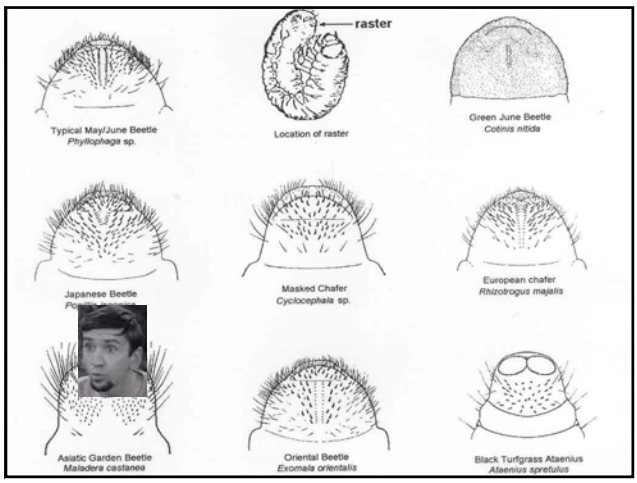
Beetle Pests of Arizona Turfgrasses

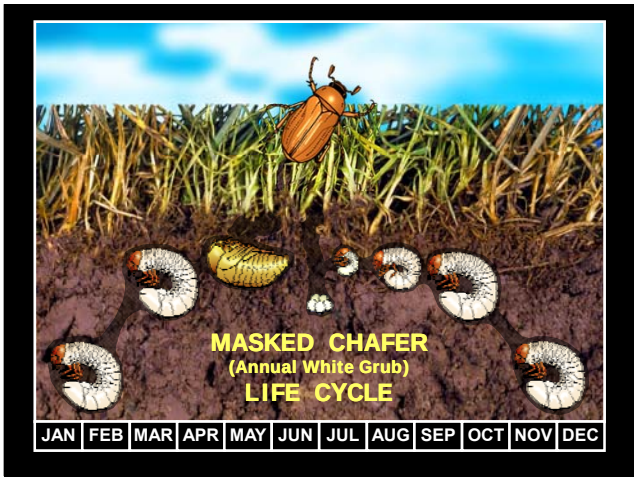
- May/June Beetle -- (Phyllophaga spp.)
- Masked Chafer -- (Cyclocephala spp.)
- Black Turfgrass Ataenius (aka BTA)

Photos courtesy of Ohio State University

Grubs Similar in Appearance

Different Life Histories



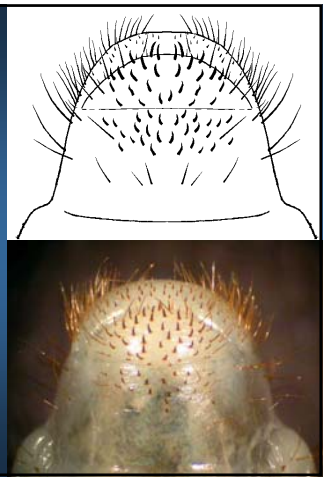


White Grubs
Sampling

Use a golf course cup cutter to take 4-inch or 8-inch diameter turf-soil core samples

Usually done in "historic" feeding areas

Masked Chafers
Cyclocephala spp.

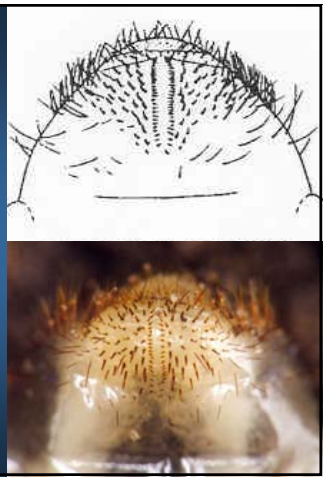


Treatment Thresholds for Masked Chafer Grubs:

Moisture Stressed Turf: 8-10 per ft^2

Well-Watered Turf: 15-20 per ft^2

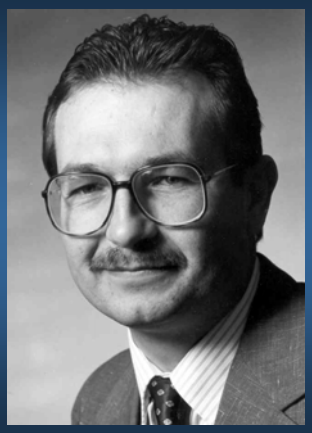
May/June Beetles
Phyllophaga spp.

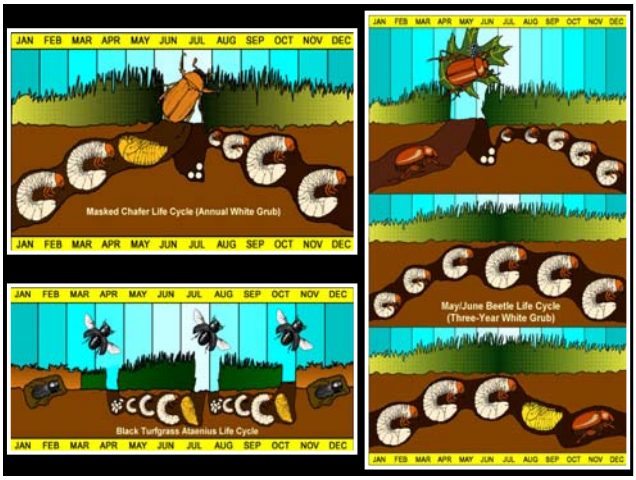


Treatment Threshold for May or June Beetle Grubs:

P(more for bermudagrass)

3-5 per ft^2





BTA

- Grubs – 6 legs
- Small size
- Like cool Season grass

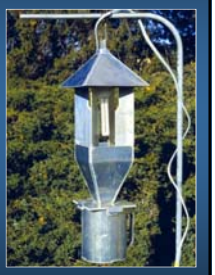
White Grub Insecticides

Pyrethroids None	**OPs & Carbamates** Carbaryl (Sevin) Trichlorfon (Dylox)
Neonicotinoids Clothianidin (Arena) Imidacloprid (Merit) Thiamethoxam (Meridian)	**Additional Chemistry** Chlorantraniliprole (Acelepryn)
Combination Products Clothianidin + bifenthrin (Aloft) Imidacloprid + Talstar (Allectus)	**Biologicals and Misc** Entomopathogenic Nematodes

Monitoring Program

Detection and Monitoring Techniques

- Visual inspection
- Soil sampling
- Irritant solutions
- Flotation
- Pitfall traps
- Sweep samples
- Light & Pheromone traps

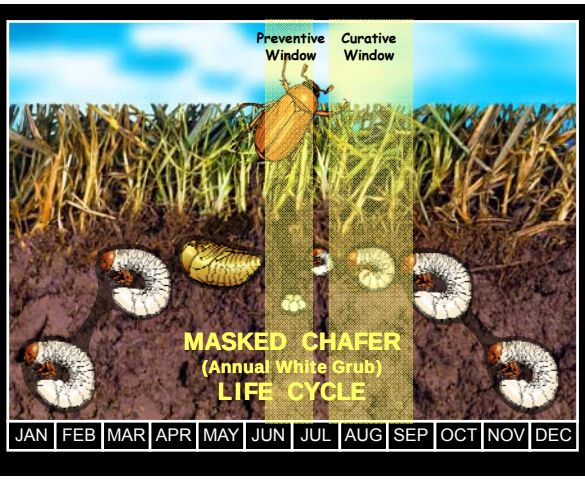


Insecticide selection is important!

In the old days...

Curative vs. Preventive Control Agents

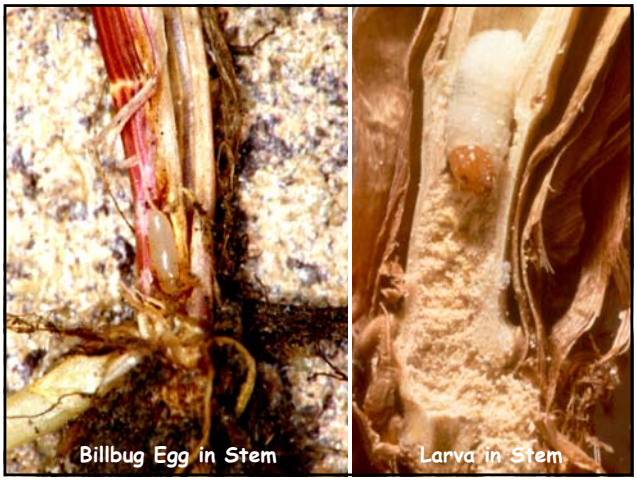
Curative (Traditional)	Preventive
Fast-acting, short-residual insecticides (2-4 weeks)	Slower-acting, long-residual insecticides (2-3 months)
Narrow treatment window	Increased flexibility in treatment timing
Treatments applied once insects are detected	Treatments applied prior to egg hatch
Dylox and Sevin	Acelepryn, Arena, Meridian, and Merit



BILL BUGS

Hunting Billbug

Sphenophorus venatus



Hunting Billbug Biology

- Transition and warm season grasses, esp. zoysiagrass and improved bermudagrasses
- Becoming a problem on Kentucky bluegrass, tall fescue and perennial ryegrass
- Life cycle variable depending on host and location
- Overwinter as adults or 3rd instar larvae
- Usually one generation per year

Hunting Billbug Damage

- Irregular patches of brown and dying turf
- Delayed spring green-up of zoysiagrass and bermudagrass, *bermuda- regrowth.*
- Damage most visible in late spring and early summer

Phoenix Billbug

Sphenophorus phoeniciensis

Phoenix Billbug Turfgrass Hosts

- Bermudagrass and zoysiagrass in Arizona and Southern California

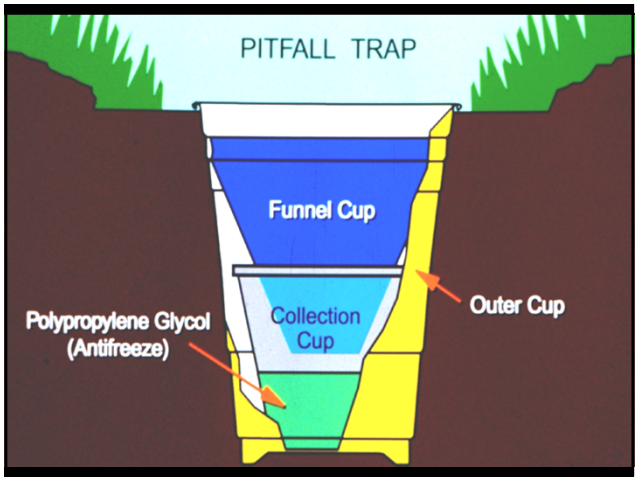
Tolerance Levels for Turfgrass Billbugs:

Adults: 1 per ft^2

Larvae: 25-30 per ft^2

Billbug Monitoring Techniques (Adults)

- Visual search of turf or pavement
- Soapy Flush (¼ cup lemon-scented liquid detergent in 2 gallons of water spread over 1 yd^2)
- Pitfall trapping



Pitfall Trap Monitoring
Adult Billbugs

Place traps at 20-foot intervals around billbug history areas.

2 - 5 per trap = Moderate Damage

7 - 10 per trap = Severe Damage

L. Hellman – U of Maryland

Billbug Sampling Techniques (Larvae)

- Tug test
- Soil/thatch sampling

Soil is "not soft" like from grubs !

Billbug Management

Cultural Practices

- Select well adapted turfgrasses
- Reduce stress through adequate watering and fertilization
- Use endophyte-enhanced cultivars (perennial ryegrasses and fescues)
- Reduce thatch

Billbug Insecticides

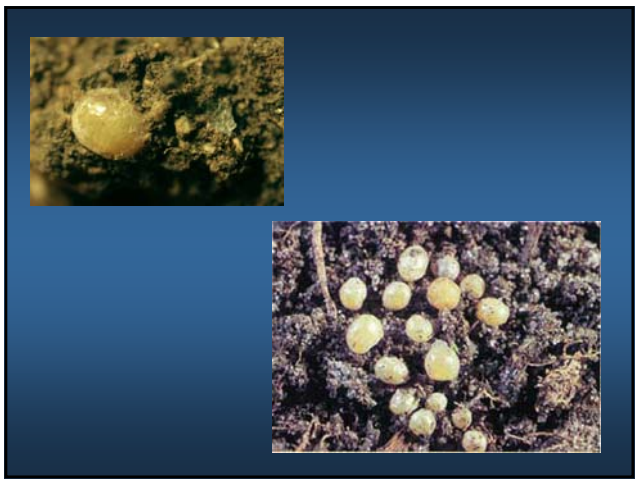
Adults:
- Bifenthrin (Talstar/Aloft/Allectus)
- Carbaryl (Sevin)
- Cyfluthrin (Tempo)
- Deltamethrin (DeltaGard)
- Lambda-cyhalothrin (Scimitar)

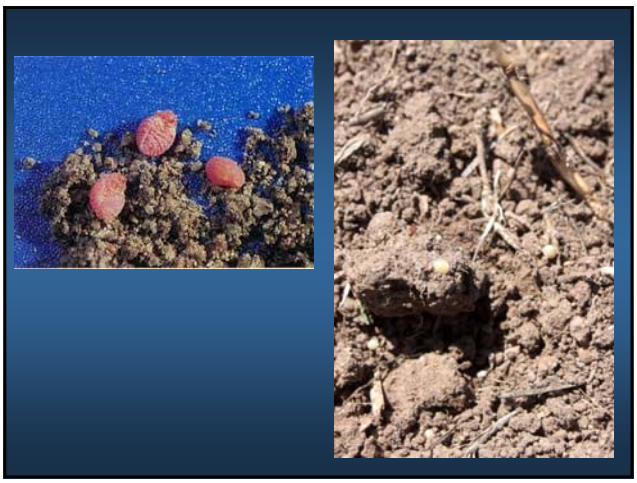
Larvae:
- Chlorantraniliprole (Acelepryn)
- Clothianidin (Arena/Aloft)
- Imidacloprid (Merit/Allectus)
- Thiamethoxam (Meridian)

Billbug Larva

White Grub

Ground Pearls or Pearl Scales





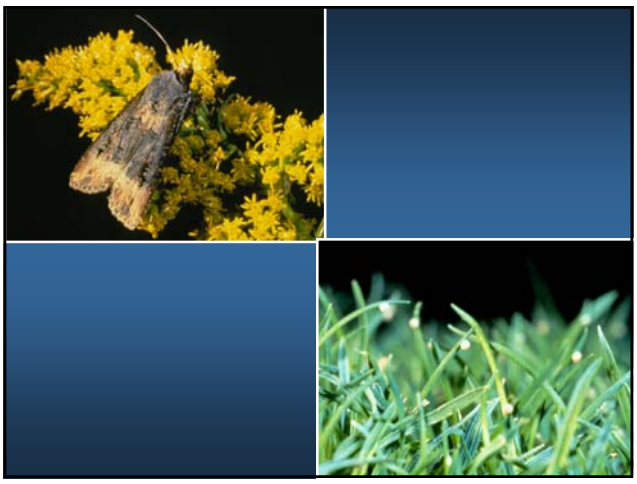
Insecticides for Controlling: Ground Pearls

☐ Acephate	☐ Fluvalinate
☐ Bifenthrin	☐ Halofenozide
☐ Carbaryl	☐ Imidacloprid
☐ Chlorpyrifos*	☐ Lambda-cyhalothrin
☐ Cyfluthrin	☑ Permethrin
☐ Deltamethrin	☐ Pyrethrin
☐ Diazinon	☐ Spinosad
☐ Ethoprop	☑ Triclorfon

* Effective 31DEC01, chlorpyrifos will no longer be allowed for use on residential lawns; the application rate for commercial sites will be limited to 1 lb a.i./acre

≠

ABOVE GROUND TURF FEEDERS



Tolerance level

Black Cutworms on….

1. Cool season *(high elevation)* Greens and Tees.
2. High cut irrigated bermuda in SHADE…..

Very Low!!
(less than 1 per yd^2)

Control Strategies for Cutworms & Webworms

- Liquids better than granules
- Apply insecticides late in the day
- Withhold irrigation for 24 hours
- Treat 30' border around greens C3 grasses at high elevations.

Cutworm Insecticides

Pyrethroids
Bifenthrin (Talstar)
Cyfluthrin (Tempo)
Deltamethrin (DeltaGard)
Lambda-cyhalothrin (Scimitar)
Permethrin (Astro)

Neonicotinoids
Clothianidin (Arena)
Thiamethoxam (Meridian)

Combination Products
Clothianidin + bifenthrin (Aloft)
Imidacloprid + Talstar (Allectus)

OPs & Carbamates
Acephate (Orthene)
Carbaryl (Sevin)
Chlorpyrifos (Dursban)
Trichlorfon (Dylox)

Additional Chemistry
Chlorantraniliprole (Acelepryn)
Halofenozide (Mach 2)
Indoxacarb (Provaunt)

Biologicals
Spinosad (Conserve)

Sod Webworms

Sod Webworm
Host Plants and Damage

- Feed primarily on cool season turfgrasses
- Bentgrass greens at all Az. elevations.
- Find them on low cut bermuda – no damage.
- First instars feed on the leaf surface
- Larger stages drag cut leaves back into burrow
- Spin a "web" in their nest.
- Most feeding is done above growing point

Monitoring Techniques

- Soapy flush (disclosing solution)
- Count patches of feeding damage
- Pheromone or light traps for adults

Soapy Flush

- ¼ cup lemon-scented liquid detergent in 2 gallons of water spread over 1 yd^2
- Wait 5-10 minutes for webworms to come to the surface

Tolerance Level
Sod Webworms

15 or more per yd^2

Sod Webworm Insecticides

Pyrethroids
- Bifenthrin (Talstar)
- Cyfluthrin (Tempo)
- Deltamethrin (DeltaGard)
- Lambda-cyhalothrin (Scimitar)
- Permethrin (Astro)

Neonicotinoids
- Clothianidin (Arena)
- Thiamethoxam (Meridian)

Combination Products
- Clothianidin + bifenthrin (Aloft)
- Imidacloprid + Talstar (Allectus)

OPs & Carbamates
- Acephate (Orthene)
- Carbaryl (Sevin)
- Chlorpyrifos (Dursban)
- Trichlorfon (Dylox)

Additional Chemistry
- Chlorantraniliprole (Acelepryn)
- Halofenozide (Mach 2)
- Indoxacarb (Provaunt)

Biologicals
- Spinosad (Conserve)

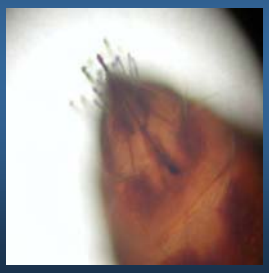
Ants

So what's the problem?

Common species in AZ: Southern Fire Ant

- Not as bad as Red Imported Fire Ant
- Sting is mildly painful and harmless unless allergic
- Somewhat aggressive, may attack in groups
- Small and large workers, red/brown/black color

Native to AZ: Southern Fire Ant



Close trimming or treating edges with Round Up generates the perfect bare soil habitat for our fire ants

Turf Ant Behavior

- Ants feed on many foods
  - Insects including cutworms, white grubs and earthworms
  - Aphids & honeydew, seeds and nectar
- Main colony usually located off green
  - Sub-colonies on greens mostly for food storage

Turfgrass Ants
Chemical Control

- Neonicotinoids
- Pyrethroids
- Baits

Ant Control in Turf
Neonicotinoids

- Apply when mounds first appear in the spring
- Should suppress colonies for 8-12 weeks but may take 2-4 weeks to provide control
- Clothianidin (Arena)
  Thiamethoxam (Meridian)

Ant Control in Turf
Pyrethroids

- Apply when mounds first appear in the spring
- Provide only 2-3 weeks control – limited residual activity on soil surface
- Insecticides do not penetrate deep enough to reliably kill colonies
- Bifenthrin (Talstar)
  Cyfluthrin (Tempo)
  Deltamethrin (DeltaGard)
  Lambda-cyhalothrin (Scimitar)

Ant Control in Turf
Baits

- Baits may lose effectiveness when wet or when ants aren't foraging due to cold or wet weather
- Abamectin (Advance Carpenter Ant Bait)
- Hydramethylnon (MaxForce Granular Insect Bait)

- Advion® Fire Ant Bait
- Distance® Fire Ant Bait

Apply 3-4' around fire ant mounds when ants are actively foraging and rain is not expected for at least 6 hours.

Post and prohibit activity near treated mounds while granules are present

Extinguish®

- Bait formulation carried back to the mound by foraging workers.
- Insect growth regulator (IGR), slower acting than non-IGR baits.

STOP
?