

Insects of Zoysiagrass

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*Adapted from
Common Turf Arthropod Pests
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Grass

Thatch

Soil



Arthropod Pest Complex in Florida Turf

Leaf/Surface Feeders

- Caterpillars
- Greenbug aphids
- Red imported fire ants

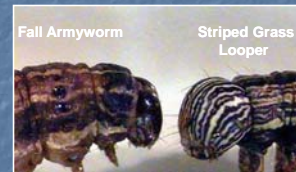
Root Feeders

- Mole crickets
- White grubs
- Ground pearls

Stem/Crown Feeders

- Southern chinch bugs
- Twolined spittlebugs
- Billbugs
- Mites

Caterpillars



Tropical Sod Webworm

Fall Armyworm

Striped Grass Looper

Pest Moths



Tropical sod webworm



Fall armyworm



Striped grass looper

Wingspan: ½ to 1"

~ 1 ½"

1 ½"





Caterpillar IPM

- **Cultural Control:**
 - Avoid excessive turf fertilization, especially in late summer
 - Mow at low height and destroy clippings to remove any eggs
- **Biological Control:**
 - Various natural enemies (stink bugs, spiders, ants, birds, other animals) may help suppress caterpillars
- **Chemical Control:**
 - Many broadspectrum insecticides are available and effective. Try more selective products like B.t. or Conserve (spinosad) first, if possible

Twolined Spittlebug (*Prosapia bicincta*)



- Feeds on many grasses, weeds, & ornamentals
- Suck plant juices
- Nymphs in spittle-masses
- 2 generations/year

Twolined Spittlebug IPM

- **Cultural Control:**
 - Avoid conditions that favor thatch build-up
- **Biological Control:**
 - No nymphal natural enemies; adults are attacked by birds, spiders, assassin bugs, and a fungus
- **Chemical Control:**
 - Few insecticides are effective
 - Use enough water volume to penetrate thatch

Billbugs (*Sphenophorus* spp.)




- Gray to black weevils
- Larvae are legless
- Hunting billbug has a Y-shaped area on pronotum with a parenthesis-like marking on each side
- Possibly 2+ generations each year in Florida

Billbug IPM

- **Cultural Control:**
 - Keep turf fertilized and moist to survive damage
 - Dethatch to reduce habitat
- **Biological Control:**
 - Entomopathogenic nematodes kill larvae and adults
- **Chemical Control:**
 - Preventive insecticides used against grubs should work, but have been less effective in Florida, possibly because of poor timing
 - Curative insecticides have had variable efficacy


Zoysiagrass Mite

(Eriophyes zoysiae)



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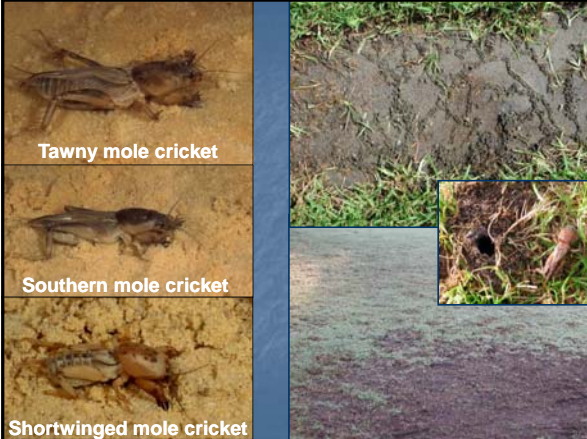
- Eriophyid mite
- Hosts: *Zoysia* spp.
- Infests unexpanded leaves, leaf sheaths, collars, seed heads
- Cultivar 'Emerald' is resistant, but 'Belair', Meyer', and 'El Toro' are susceptible



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Mite IPM

- **Cultural Control:**
 - Keep grass properly fertilized and irrigated
 - Scalp turf & destroy clippings
- **Biological Control:**
 - Natural enemies have not been studied
- **Chemical Control:**
 - Miticides
 - Use enough spray volume to penetrate thatch





Tawny mole cricket

Southern mole cricket

Shortwinged mole cricket

Tawny Mole Cricket



(Scapteriscus vicinus)

- Feed on roots at night
- Adult males call females for 1 hr after sunset
- Egg laying: March – June
- Females make 3-5 egg chambers, each with ~40 eggs
- Eggs hatch in ~3 weeks
- Nymphs feed through summer, most are adults by October

Southern Mole Cricket



(Scapteriscus borellii)

- Omnivorous
- Adult males call females for 1 hr after sunset
- Egg laying: May – July
- Eggs hatch in ~3-4 weeks
- Nymphs develop slowly; most overwinter as nymphs

Shortwinged Mole Cricket

(Scapteriscus abbreviatus)

- Eat turfgrass roots
- Adults cannot fly
- Look like southern mole crickets
- Males chirp at rather than call for females
- Most nymphs become adults by fall

IPM Program for Mole Crickets

- Monitoring and correct identification
- Cultural controls
 - Avoid using lights at dusk/early night
- Host plant resistance
- Biological control
 - *Larra bicolor*, *Ormia depleta*, insect-parasitic nematodes



Chemical Control



Preventive:

- Treat young nymphs in May/June, soon after egg hatch
 - Many contact insecticides available

Curative:

- Treat after damage occurs, usually summer, fall, or spring
 - Baits
 - Spot treatments

Scarab Beetles (Coleoptera: Scarabaeidae)

- Dung beetles and plant-feeders
- 1400 North American species
- Scarabs vary in size, color, and habits, but adults can be recognized by their 3-segmented, clubbed antennae
- Larvae molt 3 times (have 3 instars)



Masked Chafers (*Cyclocephala* spp.)



- Some of the most abundant and damaging grubs in U.S.
- 6 species in Florida: *C. borealis*, *C. lurida*, *C. miamiensis*, *C. parallela*, *C. puberula*, *C. seditiosa*



- Adults are tan and about 5/8 inches long. Mature grubs are ca. 1 inch long.
- Hosts: Grubs feed on all warm-season grasses. Adults don't eat.

May/June Beetles (*Phyllophaga* spp.)



- 54 species in Florida
 - *P. bruneri*, *P. latifrons*, *P. quercus*, *P. uniformis*



- 1-3 year life cycle in U.S.; 1-2 generations/year in Florida
- Adults are dark brown, often hairy, and less than 1 inch long
- Hosts: Grubs feed on roots of most grasses, pine seedlings. Adults feed on tree leaves.

Green June Beetle (*Cotinis nitida*)



Lyle Buss, Univ. of FL



- 1 year life cycle
- Grubs feed on organic matter, often where organic fertilizers are used
- Adults feed on over-ripe fruit in August in north Florida
- Grubs walk on their back

IPM Program for White Grubs

- Identify your pest species or genus
- Determine how many grubs/sq. ft. are damaging
- Cultural controls
 - Soil moisture, soil organic matter, lights, overseed with endophytic ryegrass
- Biological control
 - Wasps, nematodes, pathogens, animals
- Chemical control
 - Know when adult beetles fly; apply preventives during egg lay/hatch



Insecticide Costs

OPTION	RATE	PRICE / 1,000 FT ²
Azabrotol	1.3 oz/1,000	\$2.03
Conservic SC	1.2 oz/1,000	\$3.36
DeltaGard SC	0.4 oz/1,000	\$0.58
Dylox 80	3.75 oz/1,000	\$3.54
Blach 2	1.5 oz/1,000	\$1.27
Merit	0.15 oz/1,000	\$2.58
Orthene TT&O	0.8 oz/1,000	\$0.80
Sevin SL	3.0 oz/1,000	\$0.80
Talstar One	0.25 oz/1,000	\$0.25