

**UF** | IFAS Extension  
UNIVERSITY of FLORIDA

# Identification and Management of Turf Insect Pests

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# **Turfgrass Pests- Where are they hiding?**

- Leaf, stem and thatch inhabitants
- Soil inhabitants





Southern Chinch Bug  
*Blissus insularis*

On the Run Since 1783

## Southern Chinch Bugs (*Blissus insularis* Barber)

- Most significant pest of turfgrasses in Florida
- Predominant pest of St. Augustinegrass
- Recognized as a pest for more than 200 years!
- (Hemiptera: Blissidae)
- Blissidae: More than 50 genera, 400 species
- 20 *Blissus* species, 4 pests of turfgrass
- *B. insularis* only one of those that is a pest species of warm season grasses



David Shetlar, The Ohio State University, Bugwood.org

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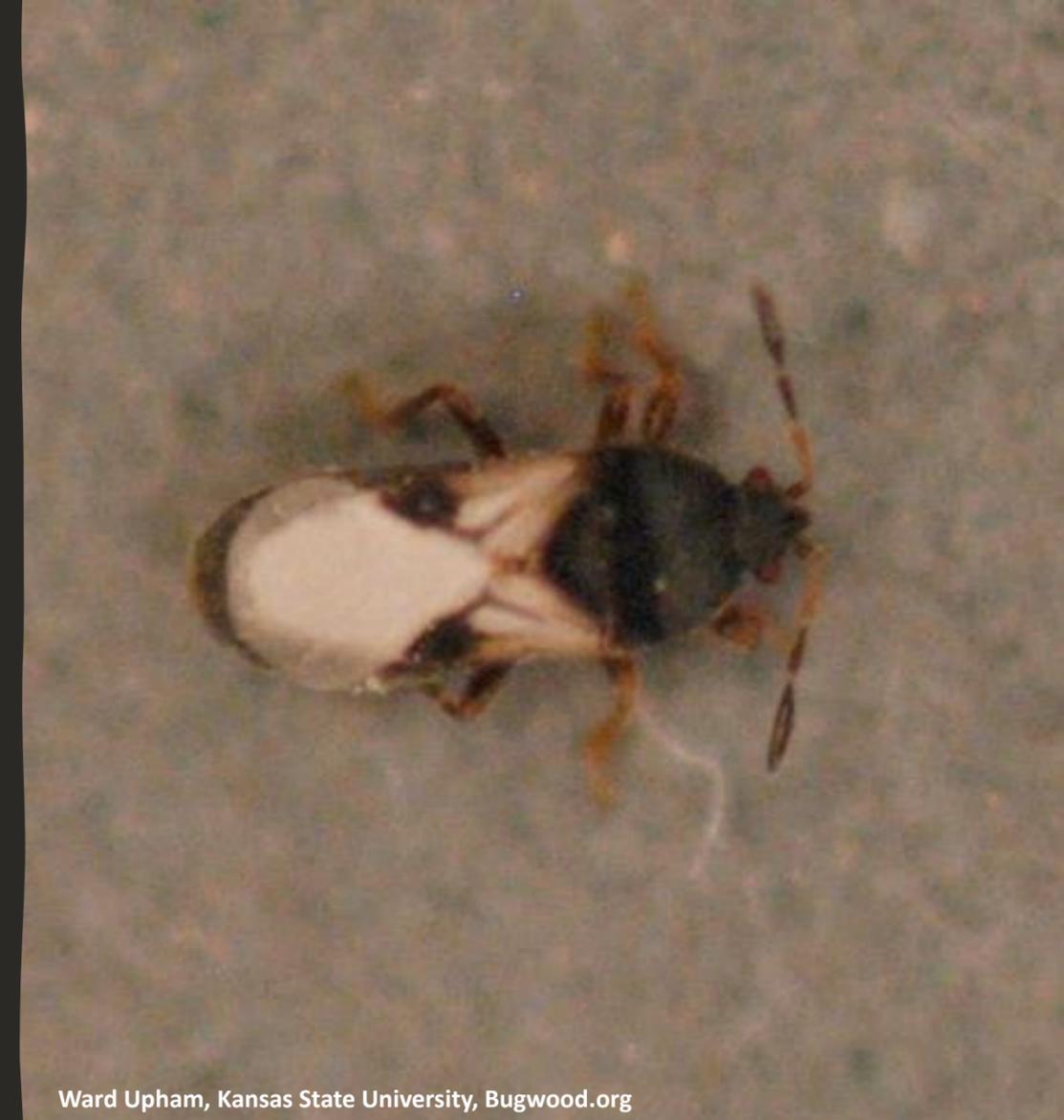
**Hairy Chinch Bug**  
*Blissus leucopterus hirtsu*



Natalie Hummel, Louisiana State University AgCenter, Bugwood.org

5428828

**Common Chinch Bug**  
*Blissus leucopterus leucopterus* (Say)



Ward Upham, Kansas State University, Bugwood.org

**Western Chinch Bug**  
*Blissus occidentus*



**False Chinch Bug**  
*Nysius raphanus*



## Damage

- Circular, patchy areas of yellowing grass
- Full-sun, water-stressed areas first attacked and most heavily damaged
- Confused with drought stress
- Pest favors a thick thatch layer
- Heavy damage requires resodding

# Identification

- **Adults:** Black, oval and oblong body, shiny white wings with distinctive triangular marks
- Short-winged vs long-winged adults
- **Nymphs:** Resemble adults only smaller; early instars red with white band
- **Development:** 4- 10 generations per year, ectothermic
- Highest populations in July, damage all year long



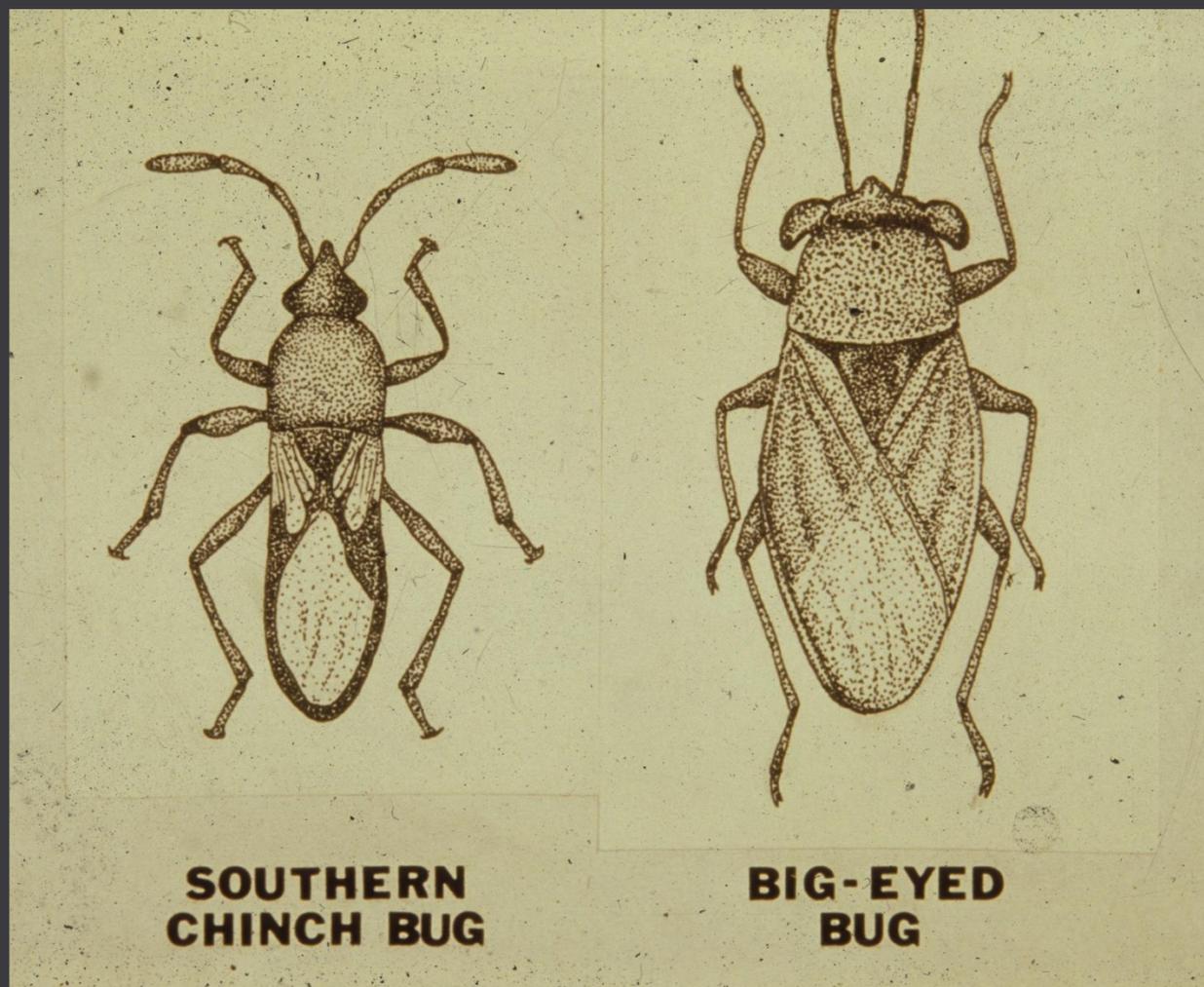
Photo by D.S. Reiland, <https://content.ces.ncsu.edu/chinch-bug-in-turf>





## Southern Chinch Bug IPM

- IPM is key to managing southern chinch bugs
- Scouting/monitoring to keep populations suppressed is crucial
- Proper cultural practices: mowing, fertilization, irrigation, thatch reduction
- Notoriously resistant to a wide range of chemical classes, rotate MOAs, choose systemic products
- Conserve natural enemies (big-eyed bugs, striped earwigs, minute pirate bugs, assassin bugs, parasitic wasp)





More Info?

Florida Turf Digest, Vol. 39 No.4,  
Summer 2021

*Southern Chinch Bugs: IPM  
Strategies for a Centuries-Old Pest  
of Southern Lawns*

# Mole Crickets

(*Neoscapteriscus spp.*)



## Mole Crickets

*Neoscapteriscus abbreviatus*

*Neoscapteriscus borellii*

*Neoscapteriscus vicinus*

- Pest species: Short-winged (*N. abbreviatus*), Southern (*N. borellii*), Tawny (*N. vicinus*)
  - ✓ Non-native, invasive: Unintentionally transported into southeastern US around 1900
- Non-pest mole cricket: Northern mole cricket, *Neocurtilla hexadactyla*
  - ✓ Native, common in eastern US
- Sod farms, home lawns, golf courses, sports fields and pastures host mole crickets
- Particularly like bahiagrass and bermudagrass
- Soil inhabitants most of their life

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Characteristic tunneling

Feeding on roots and tunneling  
can damage or kill turf



# Native vs Non-Native



# Pest Mole Crickets- Identification



Southern mole cricket



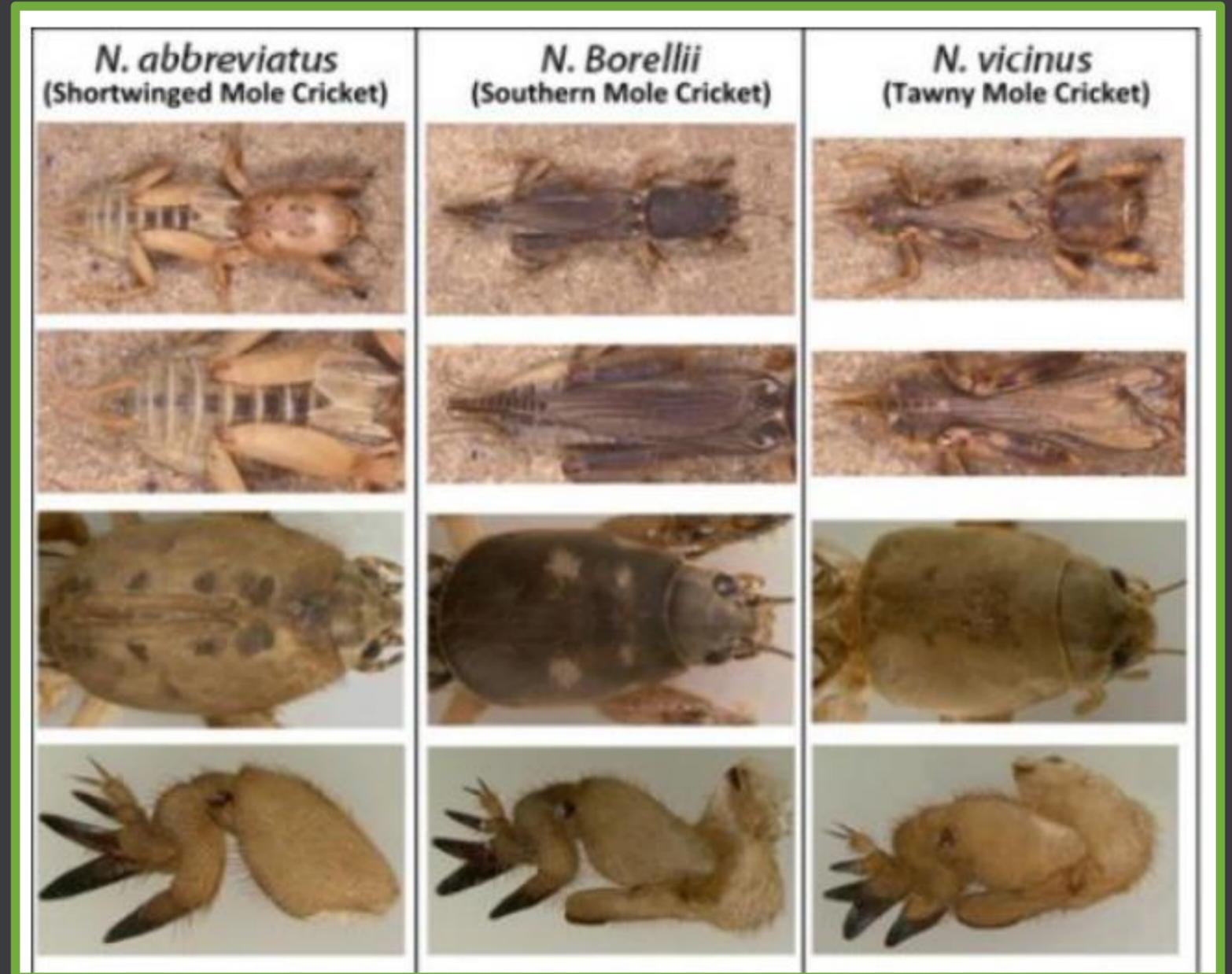
Short-winged mole cricket



Tawny mole cricket



Photo by Julie McConnell, UF/IFAS Extension Bay County





## Life Cycle

# Mole Cricket Development

- Adults overwinter in soil
- As temps increase (late Feb and March), adults emerge and begin to mate
- Males construct a chamber in soil and chirp to attract females
- Males die after mating and females' tunnel is soil and lay eggs, then die
- Lay 4 clutches of eggs of about 35 eggs per clutch the winter as adults in the soil



# Mole Cricket IPM

- Level of management depends on turfgrass purpose (golf course greens > sports fields and sod farms > commercial and home lawns)
- Centipede and zoysiagrass most tolerant
- **Eliminate lights** from sunset to well past dark during months of peak mole cricket flight
- **Regular monitoring, good cultural practices** are key
- **Soapy water drench** to identify and observe life stages present
- **Map areas of infestation** for intensive monitoring (2-4 per 4 ft<sup>2</sup> threshold)
- Insecticides (some baits) available, timing important, apply when immature, Rotate MOAs
- Biocontrol agents present (not commercially available)





# Larra Wasp

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✓ *Shrubby False Buttonwood, Spermacoce verticillata*

# Mole Cricket Nematodes - *Steinernema scapterisci*



**Birds!**



***Beauveria bassiana***





## Tuttle Mealybug

*Brevennia rehi* (Lindinger)

On the Run Since 1975

# Tuttle Mealybug

*(Brevennia rehi Lindinger)*

- Significant increase in outbreaks/reports throughout the Florida since 2016
- First found in Florida in Pompano Beach, rarely problematic until later 2000s
- Primarily zoysiagrass pest also attacks bermudagrass and other species
- Occurs mostly where rice and sugarcane are grown (aka rice mealybug)
- Found worldwide
- Widespread in Florida



# Tuttle Mealybug

*(Brevennia rehi)*

- Sap-feeding insects
- Small, pink bodies (<2mm)
- Produce white wax
- Scout for gray-brown areas and white wax
- Inspect declining turf to confirm identity
- Hide in thatch





# Tuttle Mealybug IPM

- Thatch management is key to control!
- Verticutting in Spring
- If evident infestation, within 2 weeks after verticutting, make an insecticide application
- Use a systemic insecticide that the mealybugs will ingest as they feed on the plant sap. Do not rely on contact-toxic products!
- Rotate MOAs, mealybugs are highly likely to develop resistance to insecticides

# Bermudagrass Mite

*(Eriophyes cynodoniensis)*



## Bermudagrass Mite

*(Eriophyes cynodoniensis)*

On the Run Since 1962

- Eriophyid mite (bud, blister, gall, rust)
- Extremely small (0.2 mm)
- Specific to bermudagrass (Celebration)
- Sap-feeding
- First discovered in Florida in 1962, at Patrick Space Force Base in Melbourne, Florida
- Has become more problematic in recent years
- Golf and sports fields most affected



From a distance...Yellowing to necrotic areas

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- Mites live protected within sheaths entire life (up to 200)
- Rapid generation time (2 weeks)

- Spring and early summer most activity
- Disperse on air currents, hitchhike on mole crickets, grass clippings



# Bermudagrass Mite IPM

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- Following UF/IFAS Best Management Practices for bermudagrass (mowing height, fertilization, etc.)
- Some tolerant cultivars (TifSport/Tifway)
- Heavy infestations: scalped or mowed as low as possible and grass clippings disposed of off-site
- Some chemical control options available for golf courses and sports fields (even fewer for commercial and home lawns)
- Abamectin most consistent control (with surfactant)



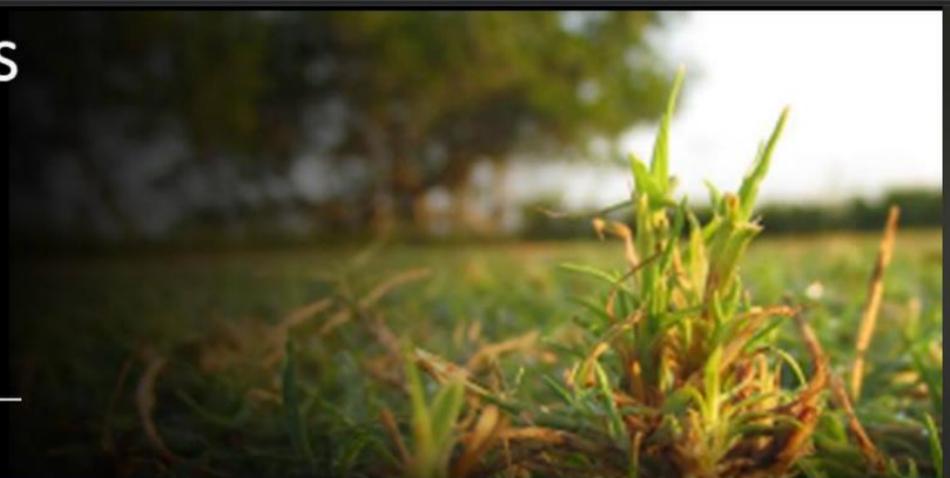
# Bermudagrass Mite Discussion Forum

Moderated by:

Group by University of Florida - Turfgrass Science

## Bermudagrass Mite

Private group · 52 members



# Facebook Group/Discussion Forum by UF Turf Team (currently 52 members)

### The Curious Case of the Bermudagrass Mite

By **Bonnie C. Wells, DPM**, Extension Agent II, Commercial Horticulture, UF/IFAS Extension, Brevard County

The bermudagrass mite has changed the playing field for golf courses, athletic fields, lawns, and sod farms across the Southern U.S. This tiny, translucent pest inflicts significant damage to bermudagrass fields and has recently become an increasing problem for Florida's turfgrass industry. As the name implies, the pest feeds exclusively on bermudagrass—the most widely used turfgrass in the world. Bermudagrass occupies a considerable portion of the nation's athletic field, golf course and lawn care industries and, as such, is highly maintained to preserve aesthetic quality and safe playing conditions. Turf damaged by bermudagrass mites increases the risk of injury to athletes, reduces the quality of play on golf courses and induces economic losses on sod farms resulting from reduced sod quality. As a result, there is a very low tolerance for damage associated with the pest.

Although the bermudagrass mite has proven to be more problematic in the past few years, it is not a new pest. The bermudagrass mite, which is native to Africa, was first discovered in the U.S. in 1959 infesting a bermudagrass lawn in Phoenix, Arizona. A few years later, in the spring of 1962, the mite was discovered infesting the golf course at Patrick Airforce Base in Brevard County, Florida, and thereafter found scattered across the East Coast of Florida

But why has the pest been around for quite some time but only recently has its damage increased in severity? The answer to this question is largely unknown and creates a curious case for scientists studying the bermudagrass mite and its management. Some speculation suggests the pest's newly found notoriety could be the result of increased awareness by superintendents through better education about the pest. It could also be due to changes in mowing practices, cultivar selections, pest management decisions or irrigation practices that have made the environment more favorable for bermudagrass mite populations to flourish. Likely it's a combination of factors that are contributing to the more recent outbreaks. But now with more research focus on the pest, we have improved the offensive and defensive strategies we use against one of the turfgrass industry's most challenging opponents.

So, knowing what we know about this unusual pest, how can we best manage it? The primary method for controlling them has been with pesticides, which can be expensive and sometimes cost-prohibitive, with limited efficacy and with label use restrictions. In addition, broad-spectrum pesticides are harmful to pollinators and other beneficial insects.

So, an integrated approach using multiple strategies such as careful monitoring and implementing cultural and mechanical controls along with reduced-risk pesticides are the most suitable management plan for bermudagrass mites in Florida.

With unique morphological features such as an elongated banana-shaped abdomen and just two-pairs of legs (when most mites have four) that are oddly forward-facing with added featherclaws to boot, the bermudagrass mite looks suitable for a science-fiction story. They are so interesting looking that you might hope to see these unusual looking pests in the wild. However, as an Eriophyid mite, it is part of the smallest group of plant feeding arthropods, and ranges in size from only 165 to 210 micrometers long. They are unobservable to the naked eye. For monitoring, scouting should be directed at looking for the mite's feeding damage.

Feeding by bermudagrass mites most commonly causes a characteristic witch's broom effect on turf, which is the result of the injection of growth hormones from the mite's saliva into the plant tissues. This will cause the leaf tips to lose color, while the internodes on the grass become stunted and form small clumps or tufts. These tufts tend to form at the stolon tips that have not yet rooted in the soil. Other

the spring and early summer but can live throughout the year in southern Florida. These mites disperse by floating on air currents, hitchhiking on other organisms, such as birds or mole crickets, and hiding in grass clippings.

Perhaps the first line of defense against these pests is to follow UF/IFAS-recommended best management practices (BMPs) for bermudagrass so that a vigorous and healthy stand of turfgrass can be achieved. Bermudagrass cultivars vary in their susceptibility to the pest. If the situation allows, choosing a more resistant bermudagrass cultivar may be your best option.

If severe mite infestations are observed, the turf should be scalped, or mowed as low as possible, and the grass clippings collected and disposed of off-site. UF/IFAS research has documented that this process can reduce bermudagrass mite damage by 50% from the time of mowing to 28 days later when the turf is regrown.

Few chemical control options are available for the bermudagrass mite on golf and sports turf fields, and even fewer options are available for sod farms, cemetery lawns and residential landscapes. In addition, due to their small size and protection inside leaf sheaths, chemical control is often difficult. UF/IFAS research has found that the miticide Abamectin has shown the most consistent control at a rate of 0.14 fl oz/1000 sq ft with increased efficacy when adding a surfactant. For more information, including a table listing insecticides and miticides labeled for bermudagrass mite control in Florida, see [www.bit.ly/3gEnF52](http://www.bit.ly/3gEnF52).

In addition, the bermudagrass mite has its own private Facebook group that is centered around learning more about this important pest and is moderated by UF/IFAS specialists. Join the discussion at [www.bit.ly/3gu7pUe](http://www.bit.ly/3gu7pUe).



Witches broom effect from mite damage on golf course fairway. PHOTO BY Dr. Bonnie Wells.



Mite damage on golf course fairway. PHOTO BY Dr. Bonnie Wells.



# Florida Turf Digest Vol. 38, No. 4 Summer Issue, Pgs. 12-13



# Fall Armyworm

*(Spodoptera frugiperda)*

- Moth larva (Noctuidae)
- Native to Western Hemisphere and US
- Overwinters only in southern Florida and southern Texas
- Adults are strong-fliers, disperse long distances in summer months
- Sporadic but serious pests of turfgrasses (bermudagrass and St. Augustinegrass)
- Immature larvae travel in masses (i.e. army)
- 2020-2021, particularly bad on golf courses

Fall Armyworm  
*(Spodoptera frugiperda)*

On the Run Since FOREVER



Fall Armyworm Damage in Turf, | Photo Credit: R. Brandenburg, NCSU



Photo Credit: R. Brandenburg, NCSU

# Fall Armyworm IPM



- Good cultural practices
- Monitor weekly with soap flushes starting late Spring
- Thresholds not clear, dependent on turf use
- Chemicals for control available, pyrethroids and spinosad (Rotate MOAs)
- Conserve natural enemies (parasitic wasps, nematodes, beetles, birds, other animals)



**Tropical Sod Webworm**  
*(Herpetogramma phaeopteralis)*

**On the Run Since FOREVER**

# Tropical Sod Webworm

*(Herpetogramma phaeopteralis)*

- Snout moth larva (Pyralidae/Crambidae)
- Destructive to warm season turfgrasses in US, especially newly established lawns, golf courses and sports fields
- Prefers lawngrass (St. Augustinegrass and bermudagrass)
- Feed on leaves
- Damage appears very quickly in infested landscapes





Nastaran Tofangsazi, University of Florida



# Tropical Sod Webworm

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# Tropical Sod Webworm IPM

- Good cultural practices!  
Excessive fertilizing major cause of outbreaks
- Monitor weekly with soap flushes starting late Spring
- Spot treat heavy infestations
- Chemicals for control available
- Natural enemies (parasitic wasps, nematodes, beetles, birds, other animals)





# White Grubs

- C-shaped
- Whitish with dark areas near the rear
- Distinct, brown head
- Adult female beetles lay their eggs in the soil
- Adults are beetles commonly referred to as chafers

# Chafers/June Beetles



Green June beetle adult



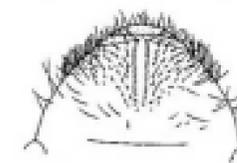
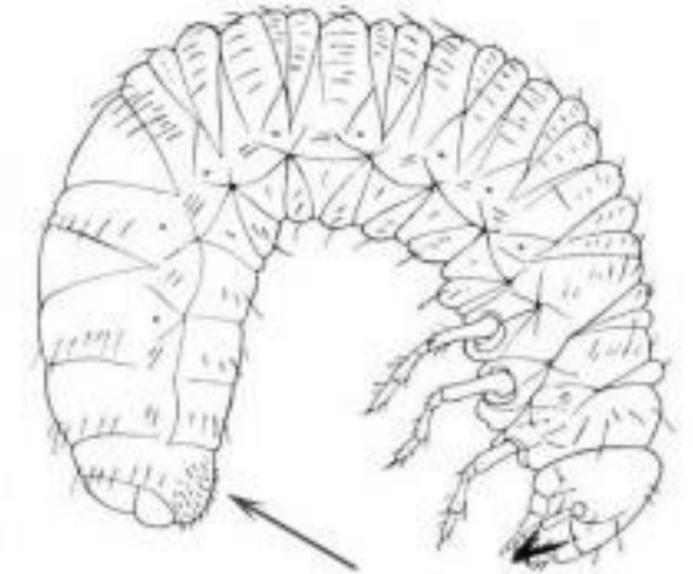
May/June beetle adult



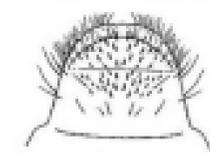
Masked chafer adult

# Grub IPM

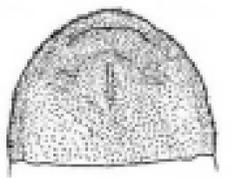
- Monitor for increasing pest populations
  - Larvae: soil, thatch, roots (1-3 inches)
  - Adults: UV, pheromone, or bait traps
- Raster patterns help determine larval type



May/June Beetles



Masked Chafers



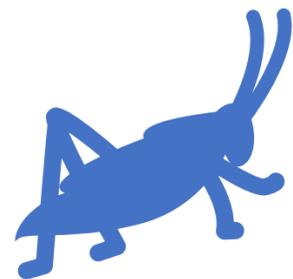
Green June Beetle

# Grub IPM Cont'd

- **Moist soils** critical for egg hatching and grub survival, also attract adult females
- Many **chemical control** options available
- **Natural enemies:** ground beetles, ants, parasitoids, nematodes, cordyceps



# Other Occasional Pests that May Be Lurking Around Turf!



# Spittlebugs



- Adults are about 3/8 inch long
- Dark brown or black, and have two orange stripes across their wings
- Nymphs are ivory with brown head
- Feed on leaves
- A heavily infested area will feel "spongy" when walked on





Striped Grass Looper



# Cutworms



University of Florida



University of Florida



# Hunting Billbugs



Ground Pearls

# Steps to Managing Turf Insects

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- Prevention
- Thatch removal
- Early detection



# Integrated Pest Management (IPM)

- Most effective and safest way to manage pests on turfgrass and ornamentals
- Key word: Management
  - You cannot eliminate pests 100%
  - Aim to keep pest numbers and damage to an acceptable level (suppression)
- Uses a combination of management practices
  - Use pesticides only if pest levels show necessary
  - Selecting control methods that **limit the risk** to human health, beneficial organisms, and the environment

# IPM Triangle

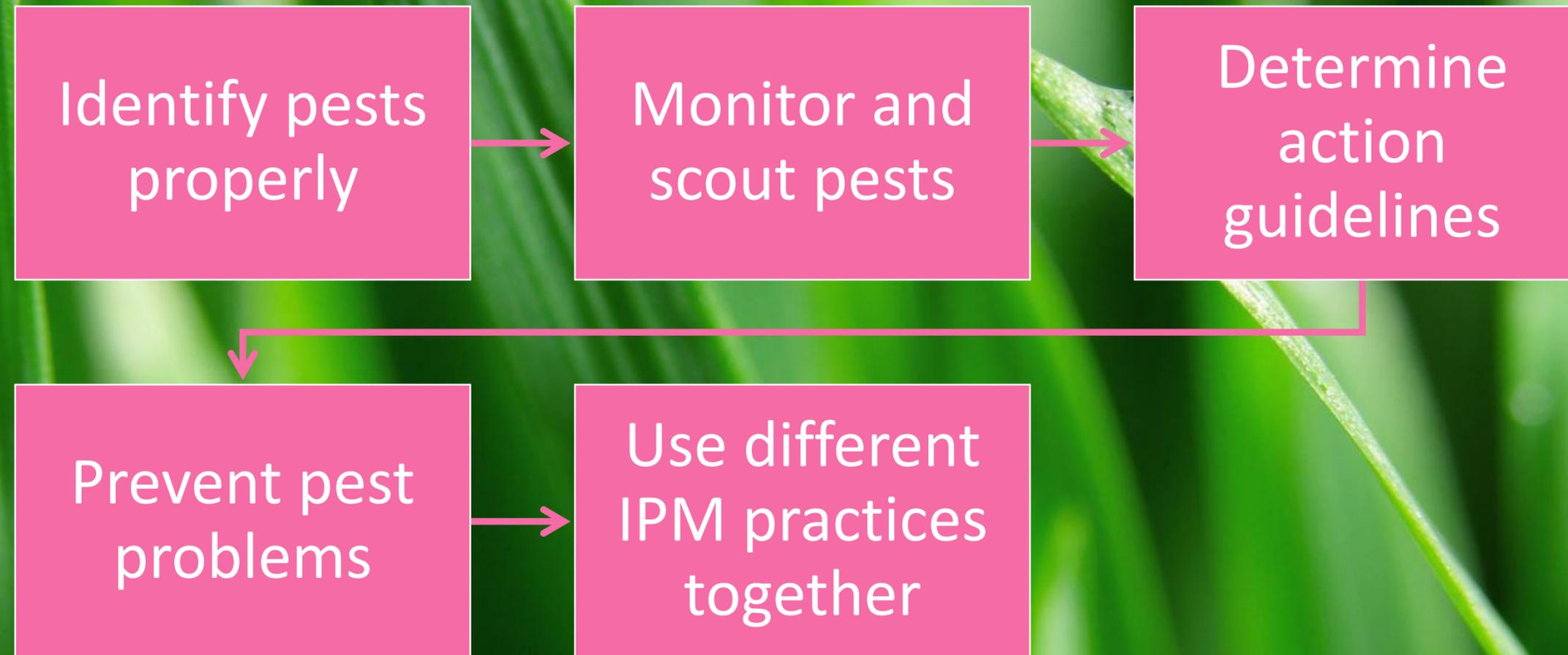
Chemical

Biological

Mechanical/Physical

Cultural

# Steps in IPM



A tropical beach scene with a green rectangular box highlighting a portion of the sky. The background shows a sandy beach, a line of lush green trees, and a blue ocean under a blue sky with white clouds. A green rectangular box is positioned in the upper center of the image, highlighting a section of the sky and the top of the trees.

# Thank You!

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