

Southern Chinch Bug Management on St. Augustinegrass ¹

Eileen A. Buss²

The southern chinch bug, *Blissus insularis*, is a difficult-to-control and damaging insect pest of St. Augustinegrass in Florida. Nymphs and adults feed on plant fluids within leaf sheaths, down in the thatch, and this feeding kills the grass plants and contributes to weed invasion. Homeowners, lawn care companies, and sod growers seek to prevent this damage by applying insecticides to keep chinch bug numbers low. However, an integrated pest management program, or insecticide resistance management program, needs to be implemented to keep the grass healthy and chinch bug populations low.

Biology and Behavior

Southern chinch bug activity occurs from March through November in north-central Florida and is year-round in southern Florida. It is estimated that 3 to 4 generations with overlapping life stages develop each year in northern Florida and 7 to 10 generations develop in southern Florida. One generation may last 6-8 weeks in hot temperatures.

Several insects live that can be confused with chinch bugs in St. Augustinegrass lawns, so proper insect identification is important. Adult southern chinch bugs (Figure 1) are about 1/8 to 1/10 of an inch long. The wings are folded flat on the back and are shiny white with a triangular-shaped black marking in the middle of the outer edge of each wing. Adults may have long or short wings, and populations often contain both. Their bodies are black. Adult females may live up to 2 months, laying 4 or 5 eggs a day, or 250-300 eggs in a lifetime.

Tiny eggs are laid singly or a few at a time in leaf sheaths, soft soil, or other protected areas. The eggs are white when first laid and turn bright orange or red just before hatching. Eggs hatch within 6-13 days (average = 10 days), and nymphs mature in 4-5 weeks. Young nymphs are reddish-orange with a white band across the back (Figure 2), darken in color as they mature (fourth instar), and turn black before becoming adults (fifth instar; Figure 1).

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2. Eileen A. Buss, assistant professor, Entomology and Nematology Department, Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida, Gainesville, 32611.

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Figure 1. Southern chinch bug adult and fifth instar. Credits: J. Castner, University of Florida



Figure 2. Southern chinch bug nymphs. Credits: J. Castner, University of Florida

Populations tend to be clumped in an area of a lawn, and usually more than one chinch bug can be found in the bottom leaf sheath on a grass plant. As their host plants die, individuals will walk to neighboring St. Augustinegrass plants to continue feeding. Thus, dead patches of grass seem to get larger over time (Figure 3). The speed of turf's death probably depends on chinch bug density and the turf's overall health.

Detecting Infestations

Damage may occur in open, sunny areas near sidewalks and driveways, but also in the middle of lawns. Infested plants have slower growth, turn



Figure 3. St. Augustinegrass yard killed by southern chinch bugs. Credits: Eileen A. Buss, University of Florida

yellow, then rusty reddish-brown, and die. The damage is often confused with drought or frost stress. New damage may appear by May or June, depending on spring temperatures, and any damage that existed in late fall will become apparent in the spring. Other factors, such as disease, nematodes, nutritional imbalances, and drought can cause off-color areas to occur in lawns. Thus, the grass should be carefully examined to determine which corrective measures may be needed. Especially in areas where pesticide resistance is suspected, monitor before and after any treatments to determine if control has been achieved.

Several methods can be used to find southern chinch bugs. The easiest and fastest is to part the grass near yellowed areas and look at the soil surface and thatch. Pull out individual grass plants and look inside the bottom leaf sheath. Examine several different areas if chinch bugs aren't immediately found. Insects are most active on warm, sunny days in mid-afternoon.

Another option is to use a Dust Buster or hand-held vacuum cleaner (electric or battery-operated) to suck up any chinch bugs near damaged areas. Remove the filter, empty the contents on the sidewalk or in a bucket, and look for nymphs and adults. Repeat in several damaged areas.

A flotation technique can also be used to detect infestations. Cut both ends out of a metal can and push one end 2-3 inches into the soil on green or yellowing grass (not dead grass). Slowly fill with

water and count the number of chinch bugs that float to the top within 5 minutes. Keep the water level above the grass surface. If nothing emerges in the first area, examine at least 3 or 4 other areas.

Host Plant Resistance

Although the southern chinch bug prefers St. Augustinegrass, it can also feed on bermudagrass, bahiagrass, centipedegrass, and zoysiagrass, but damage is not usually severe. Several varieties of St. Augustinegrass have been planted in Florida, including Bitterblue, Common, Delmar, Floratine, Floralawn, Floratam, Jade, Palmetto, Raleigh, and Seville, which are all susceptible to chinch bug damage. A new, more tolerant variety is Captiva.

Cultural Control

Cultural practices may influence the susceptibility of St. Augustinegrass to chinch bug damage. Rapid growth resulting from frequent applications of water soluble nitrogen fertilizers may increase southern chinch bug survival, shorten development time, and increase the number of eggs that can be laid rather than help plants outgrow the feeding damage. Responsible use of slow-release nitrogen fertilizers may help manage populations.

Over-watering or over-fertilization can cause lawns to develop a thick thatch layer. Certain insecticides (e.g., pyrethroids) can also bind to thatch, instead of reaching soil-dwelling pests. Thatch is a layer of accumulated dead plant roots, stems, rhizomes, and stolons between the live plant and the soil. Excessive thatch should be mechanically removed (vertical mowing, power raking, etc). Proper mowing practices can make grass more tolerant to chinch bugs and greatly improve the appearance of the lawn.

Biological Control

Common natural enemies of the southern chinch bug are big-eyed bugs, predatory earwigs, and spiders. A small wasp, *Eumicrosoma benefica*, parasitizes chinch bug eggs. Predatory bugs, like big-eyed bugs (Figure 4) and minute pirate bugs, are similar to chinch bugs in size and shape and are often mistaken for them. Insecticide use can reduce these

natural enemies and their ability to suppress pest populations. Natural enemies may not be abundant and efficient enough to keep chinch bug populations under control by themselves, all the time.

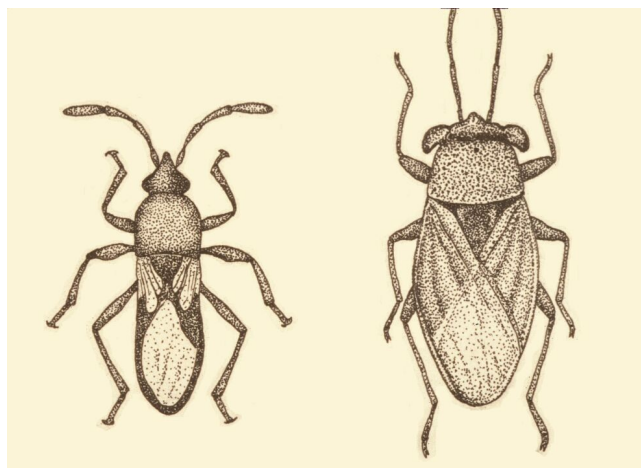


Figure 4. Southern chinch bug and big-eyed bug adults.

Chemical Control

Southern chinch bug management has relied on the preventive use of insecticides (Table 1). Some low maintenance lawns may be treated infrequently, but those under high maintenance may be treated every 2-3 months. If possible, use spot treatments when localized infestations are first noticed and damage is minimal, rather than broadcast applications. Treat dead and dying St. Augustinegrass and about a 5-foot buffer area around the damage.

If chinch bug density has decreased by at least 80%, then the treatment is considered successful. A retreatment may be needed if the eggs hatch, if encroachment occurs from a neighboring lawn, or if the insecticide residue breaks down. Many contact products will kill chinch bugs within 3-5 days of treatment, but systemic products require the insects to feed on treated tissue, and affected insects might die more slowly (up to 7 or more days). Avoid using products that are not specifically for use on turfgrass for controlling turf-feeding insects. All directions and the insecticide label should be read and understood before a product is used, particularly the dosage rates, application procedures, and precautions.

Resistance Management

Insecticide resistance to pyrethroids exists in several areas of Florida. Given the long history of southern chinch bug developing resistance to different insecticides, efforts should be made to reduce the amount and frequency of insecticide use against this pest. Having to increase the number of applications or the rate of product being used when it worked well at lower rates are warning signs of potential resistance.

Make sure applications are done correctly. Be sure pesticide applicators are properly trained and using the correct rates and walking speed, using properly calibrated equipment, etc. Rotating insecticides with different modes of action or chemical classes is very important (e.g., avoid treating only with one chemical class or mode of action).

Some products, especially granular formulations, often need to be watered in after application to help the insecticide spread into the thatch and among plants, and to release the insecticide from the carrier. If the label requires this, be sure to communicate that with the client and provide instructions on how and when to apply the proper amount of water.

For More Information

Kerr, S. H. 1966. Biology of the lawn chinch bug, *Blissus insularis*. Florida Entomologist 49: 9-18.

Reinert, J. A. 1978. Natural enemy complex of the southern chinch bug in Florida. Annals of the Entomological Society of America 71: 728-731.

Table 1. Insecticides registered for use against southern chinch bugs in Florida.

| Active ingredient | Chemical class | Retail/homeowner product examples | Professional product examples |
|--------------------------------|----------------------------|--|---|
| Bifenthrin | Pyrethroid | Scotts Lawn Pro Insect Control w/Fertilizer Scotts Turf Builder w/SummerGuard | Bifen XTS Onyx, OnyxPro Talstar EZ, PL granular Wisdom |
| Bifenthrin + clothianidin | Pyrethroid + neonicotinoid | None | Aloft |
| Bifenthrin + imidacloprid | Pyrethroid + neonicotinoid | None | Allectus |
| Bifenthrin + zeta-cypermethrin | Pyrethroid | None | Talstar XTRA |
| Carbaryl | Carbamate | Garden, Tech Sevin Gordons Liquid Dura-Spray | Sevin SL Sevin 80 WSP |
| Clothianidin | Neonicotinoid | None | Arena 0.5 G Arena 50 WDG |
| Cyfluthrin | Pyrethroid | Bayer Advanced Power Force Multi-Insect Killer | Tempo |
| Cypermethrin | Pyrethroid | None | Demon Max Demon WP |
| Deltamethrin | Pyrethroid | Southern Ag Mole Cricket & Chinch Bug Lawn Insect Control | DeltaGard G DeltaGard T&O 5 SC |
| Imidacloprid | Neonicotinoid | Bayer Advanced Season Long Grub Control | Merit |
| Lambda-cyhalothrin | Pyrethroid | Spectracide Triazicide Once & Done Insect Killer | Demand CS Demand G Scimitar CS |
| Permethrin | Pyrethroid | Spectracide Bug Stop Insect Control Granules | Astro Permethrin Pro Termite-Turf Ornamental |
| Thiamethoxam | Neonicotinoid | None | Meridian 0.33G, 25WG |
| Trichlorfon | Organophosphate | Bayer Advanced 24-Hour Grub Control | Dylox 80 T&O |

Note: Different products and formulations of insecticides are available, and have not been listed in this table. **Read the label carefully for use directions, application techniques, irrigation requirements and precautions.**