

Southern Chinch Bug Management on St. Augustinegrass ¹

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The southern chinch bug, *Blissus insularis* Barber, is currently the most 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 and lawn care companies seek to prevent this damage by repeatedly applying insecticides to keep chinch bug numbers low. However, numerous chinch bug populations have developed resistance to every major chemical class that has been used against them and host plant resistance has been overcome. An integrated pest management program, or resistance management program, must be implemented to keep chinch bug populations under satisfactory control and keep St. Augustinegrass as a viable lawn turfgrass in Florida.

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. 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. Part of the difficulty in dealing with this pest is that one generation may develop in 4-6 weeks during the summer. Any insecticides used to treat turfgrass will likely kill most nymphs and adults, but the eggs will survive, nymphs will hatch, and the infestation will continue. Thus, damage may become visible again within 2 -3 months of treatment. Encroachment from neighboring lawns is also a possibility.

Several insects live in St. Augustinegrass lawns, so proper insect identification is important before deciding that a problem exists. 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.

1. This document is ENY-325 (LH036), one of a series of the Department of Entomology & Nematology, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida. First Printed October, 1993. Revised: April 2007. Please visit the EDIS Web site at <http://edis.ifas.ufl.edu>.

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

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).



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

Southern chinch bug populations tend to be clumped, rather than randomly dispersed throughout lawns. Usually more than one chinch bug can be

found in the bottom leaf sheath on a plant and among surrounding plants. Infestations may occur in open, sunny areas near sidewalks and driveways, but also in the middle of lawns. Infested plants have slower growth, turn yellow, and die. 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 death probably depends on chinch bug density and the turf's overall health. Southern chinch bugs rarely disperse by flying.



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

Detecting Infestations

Other factors, such as disease, nematodes, nutritional imbalances, and drought can cause off-color areas to occur in lawns. Therefore, the lawn 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. If more than about an 80% reduction in chinch bug numbers has occurred, then the treatment was successful.

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. Heavy infestations are easy to identify because large numbers of chinch bugs may migrate across

sidewalks and driveways. Insects are most active on warm, sunny days in mid-afternoon.

Another option is to use a Dust Buster or hand-held vacuum cleaner (AC- or DC-operated) to suck up any chinch bugs near damaged areas. Remove the filter, empty the contents on the sidewalk or into a plastic bag, 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.

Cultural Control

Cultural practices may influence the susceptibility of St. Augustinegrass to chinch bug damage (See ENH-5: St. Augustinegrass for Florida Lawns). Rapid growth resulting from frequent applications of water soluble nitrogen fertilizers may increase southern chinch bug survival, development time, and the number of eggs that can be laid rather than help plants outgrow any damage. Responsible use of slow-release nitrogen fertilizers may help reduce pest population build-up.

Excessive watering, fertilizing, and/or fungicide use can cause lawn grasses to develop a thick thatch layer. Insecticide treatments can also bind to the thatch layer, 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, aerating, etc). Proper mowing practices can make grass more tolerant to chinch bugs and greatly improve the appearance of the lawn. St. Augustinegrass should be mowed to a height of 3 - 4 inches.

Southern chinch bugs feed on fluids within the grass plants. Thus, it is likely a myth that chinch bugs are attracted to drought-stressed areas of lawns. It is more likely that they develop faster in areas that have higher temperatures (e.g., not in shade). If plants are

wilting from drought, they are probably not good food plants. However, chinch bug damage could easily resemble drought-stress. Proper diagnosis of the problem is essential to growing healthy turfgrass.

Host Plant Resistance

Several varieties of St. Augustinegrass are available for use in Florida, but the most common one is Floratam. Floratam was released in 1973, but populations of southern chinch bugs could develop on it and damage it by 1985. All other varieties are fairly susceptible. Screening for resistant varieties continues, and NUF-76 is considered resistant and is in development. For more information on different St. Augustinegrass varieties see ENH-5: St. Augustinegrass for Florida Lawns. If control failures repeatedly occur in an area, another alternative is to change the turfgrass species being grown (e.g., switch to centipedegrass or zoysiagrass). Keep in mind that other turfgrass species also have other pest complexes.

Biological Control

Common natural enemies of the southern chinch bug are big-eyed bugs (*Geocoris* spp.), a predatory earwig (*Labidura ripara*), and spiders. A small wasp, *Eumicrosoma benefica* Gahan, parasitizes chinch bug eggs. Big-eyed bugs (Figure 4) and anthocorids (another group of predators) are similar to chinch bugs in size and shape and are often mistaken for them. Unnecessary insecticide use can reduce these natural enemies and their ability to suppress pest populations. Natural enemies are often not abundant and efficient enough to keep chinch bug populations under control by themselves. However, their populations may build after chinch bug populations increase.

Chemical Control

Southern chinch bug management is currently dependent on insecticides (Tables 1 and 2). Efforts should be made to reduce the amount and frequency of pesticide use against this pest, given its track record of developing resistance to insecticides. Researchers are studying various aspects of controlling this pest, so keep up-to-date on technology changes. The warning signs of product

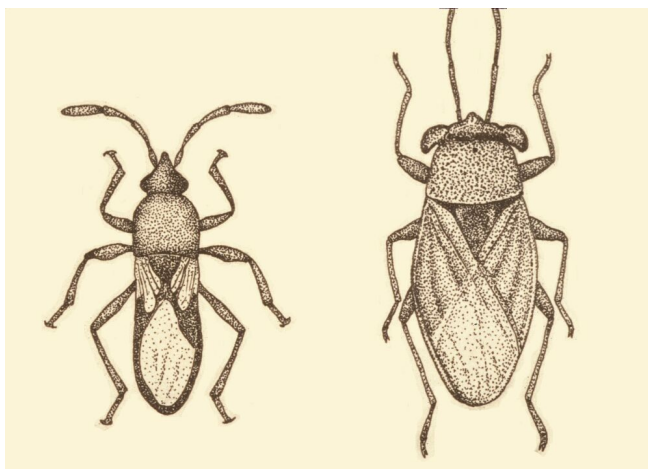


Figure 4. Southern chinch bug and big-eyed bug adults.

failure include having to increase the number of applications, the rate of product being used, or needing to use an insecticide in another chemical class or mode of action.

In areas where pesticide resistance does not seem to exist, try to use spot treatments when 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. This is because most populations are localized. Chinch bugs that were not exposed to the insecticide can interbreed with any chinch bugs that survive the treatment and dilute the resistance genes in the population. This should help delay further resistance.

In areas where resistance is suspected, be sure to monitor before and after any applications to see if the insecticides worked. This will be important information when discussing the problem with a client. Be sure pesticide applicators are properly trained and are not applying sublethal doses by either walking too fast, not applying enough product, using improperly calibrated equipment, doing an application when windy (results in drift and smaller droplets), etc. Use the highest labeled rate of the chosen insecticide, rotate insecticides with different modes of action, consider using a non-ionic wetting agent or adjuvant to increase penetration into the leaf sheaths and thatch, and determine if the spray solution needs to be buffered to have a neutral pH. If the label requires post-treatment irrigation (watering-in), be sure to communicate that with the client and provide instructions on how and when to

apply the proper amount of water. If the insecticides bind tightly with organic matter (e.g., leaf blades, thatch), then watering-in should be done soon after an application. The insecticides must get to where the insects are living and feeding to be effective. On the other hand, be careful that some insecticides might wash off with excessive rain or irrigation within a day of application.

Pyrethroids, carbamates, and organophosphates will only kill nymphs and adults, and their residuals may last from about 1 day to roughly 2 months or so, depending on the product and environmental conditions. Know the strengths and limitations of the products that are used. Many contact products will kill the insects within 3-5 days of treatment, but others (e.g., neonicotinoids like clothianidin or imidacloprid) 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 or that have been made illegal for use on residential turfgrass (e.g., Orthene or acephate). Creative label-interpretation is not in the industry's best interest and will only bring greater regulation. All directions and the insecticide label should be read and understood before a product is used, particularly the dosage rates, application procedures, and precautions. Homeowners are discouraged from applying their own insecticides to control chinch bugs if they have a professional lawn care maintenance company.

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. Examples of insecticides available for professional use on turfgrass by professional applicators in Florida.

Active Ingredient	Florida Registered Products	Chemical Class	Signal Word
Bifenthrin	Onyx Talstar EZ Talstar F Talstar One Multi-insecticide Talstar PL Granular	Pyrethroid	Warning Caution Caution Caution Caution
Bifenthrin + imidacloprid	Allectus G Allectus SC	Pyrethroid + neonicotinoid	Caution Caution
Carbaryl	Sevin 80 WSP Sevin SL	Carbamate	Warning Caution
Clothianidin	Arena 0.5 G Arena 50 WDG	Neonicotinoid	Caution Caution
Cyfluthrin (beta)	Tempo 20 WP Tempo SC Ultra Tempo Ultra WP/WSP	Pyrethroid	Caution Caution Caution
Cypermethrin	Demon Max Demon WP	Pyrethroid	Warning Warning
Deltamethrin	DeltaGard G DeltaGard T&O 5SC	Pyrethroid	Caution Caution
Imidacloprid (suppression)	Merit 0.5 G Merit 2F Merit 75 WP Merit 75 WSP	Neonicotinoid	Caution Caution Caution Caution
Lambda-cyhalothrin	Demand CS Demand G Scimitar CS	Pyrethroid	Caution Caution Caution
Permethrin	Astro Permethrin Pro Termite - Turf - Ornamental	Pyrethroid	Caution Caution
Trichlorfon	Dylox 80 T&O	Pyrethroid	Caution

Table 2. Active ingredients, trade names, and formulations of turfgrass pesticides available for homeowner use.

Active Ingredient	Florida Registered Products	Chemical Class	Signal Word
Bifenthrin	Scott's Lawn Pro Insect Control with Fertilizer Scott's Turf Builder with SummerGuard	Pyrethroid	Caution Caution
Carbaryl	Gordon's Liquid Dura-Spray Carbaryl Insecticide	Carbamate	Caution
Cyfluthrin (beta)	Bayer Advanced PowerForce Multi-Insect Killer Bayer Advanced PowerForce Carpenter Ant & Termite Killer Plus	Pyrethroid	Caution Caution
Deltamethrin	Southern Ag Mole Cricket & Chinch Bug Lawn Insect Control	Pyrethroid	Caution
Lambda-cyhalothrin	Spectracide - Triazicide Once & Done! Insect Killer	Pyrethroid	Caution
Permethrin	Spectracide Bug Stop Insect Control Granules	Pyrethroid	Caution