

Chinch Bugs in St. Augustine Lawns



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The southern chinch bug, *Blissus insularis* Barber, is one of the most important insect pests of St. Augustinegrass in Texas. It can be a problem anywhere St. Augustinegrass is grown, causing most damage in the Gulf Coast region and in the southern half of the state.

Although it is a serious pest only on St. Augustinegrass lawns, the southern chinch bug occasionally may feed on zoysiagrass, centipedegrass, bahiagrass or bermudagrass. The common chinch bug, *Blissus leucopterus leucopterus* (Say), is a closely-related species that is a pest of grain crops in Texas and throughout the Midwest. This species also occasionally damages turfgrass and may be responsible for infrequent reports of chinch bugs in bermudagrass, fescue and zoysiagrass lawns.



Chinch bug damage can be confused with certain lawn diseases or other physiological disorders. For example, brown patch is a common disease affecting the leaf blades of St. Augustinegrass. Brown patch symptoms, however, usually occur in a circular or semi-circular pattern, as opposed

to the irregular-shaped areas of dead and dying grass that result from chinch bug feeding. Chinch bug damage also can be difficult to distinguish from that caused by drought. Detecting significant numbers of the insects themselves is the best proof of chinch bug damage.

Identification

Expanding, irregular patches of dead or stunted grass surrounded by a halo of yellowing, dying grass often provide the first clue to the presence of chinch bugs. These islands of dying grass tend to increase in size and merge as insect numbers increase. Damage can develop rapidly, especially in sunny locations during hot, dry weather (Figure 1).



Figure 1. Chinch bug damage to a St. Augustinegrass lawn. Note the patches of bermudagrass left unharmed.

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Adult southern chinch bugs are small and slender, measuring $\frac{1}{8}$ to $\frac{1}{2}$ of an inch long. They have black bodies with white wings, each of which bears a distinctive, triangular black mark. Normally, some of the adults at any given site will have full-sized, functional wings. Other ones will be short-winged and cannot fly. (More details on distinguishing chinch bugs from the common beneficial insect – the big-eyed bug – are in “Tips for Professionals” on page 5.) Recently hatched nymphs are wingless, yellow or pinkish-red with a light-colored band across their backs (abdomen). After each molt the nymphs more closely resemble the adults. Before the last molt, nymphs are black or brownish-black, and have a white spot and two small wing pads on their backs.

Biology and habits

Adult chinch bugs in Texas are inactive during the winter. Reproduction begins with warmer weather in the spring. Under optimal conditions, each female can deposit up to 300 eggs, which hatch in approximately 2 weeks.

The nymphal (immature) stage lasts less than 30 days during warmer weather, while the entire life cycle lasts 7 to 8 weeks. This rapid development allows time for three to five chinch bug generations each year. However, as the season progresses, generations tend to overlap, so all stages are found at the same time.

Mouthparts of the southern chinch bug consist of a long, slender beak, which is held close to the midline of the insect's underside when the bug is not feeding. Chinch bug damage is probably due not just to the direct effects of feeding, but also to phytotoxic effects of the saliva.

Managing chinch bugs

Cultural control

Managing this pest begins with proper lawn care. By keeping thatch to a minimum, for example, you reduce chinch bug numbers and make other control methods more effective. Thatch is the layer of dead plant material found between the green tops of the grass plant and the soil below. It

provides a protective home for chinch bugs and chemically binds with many insecticides, making such controls less effective.

Proper mowing practices can help reduce thatch buildup. Excessive thatch forms when soil microbes are unable to break down dead plant material as fast as it is added. This can occur when grass is mowed too infrequently. For optimum turfgrass health, no more than 35 to 40 percent of the leaf blade should be removed at a time when mowing. This means that lawns generally should be mowed at least once a week during the growing season. Mulching or recycling mowers shred grass clippings into smaller pieces that are decomposed more easily by soil microbes. Research has shown that proper use of mulching mowers reduces the need for fertilizers and, as a result, reduces the build-up of excessive thatch.

When thatch is more than 1 inch thick, it may be necessary to have your lawn “vertically mowed.” This method of physically removing thatch can be done by yourself or by a professional lawn maintenance company. Vertical mowing can temporarily harm your lawn's appearance because it destroys the tightly woven stolon system of St. Augustinegrass. Therefore, it should be done only when the grass is actively growing in order for the lawn to recover more quickly. You can find vertical mowers at many equipment rental stores and can get more information about thatch management from the Texas Cooperative Extension publication E-139, *Thatch Management for Home Lawns*.

Lawn aeration in combination with application of a top dressing also can help reduce thick layers of thatch. Aeration involves punching holes in the turf to increase air and water penetration. You can buy a lawn aeration machine from various retail stores or have a professional lawn care company do the work. Top dressing involves applying a thin layer of sand, soil or compost to the surface of the lawn. The application can correct moderate thatch problems by increasing soil-to-thatch contact, thus speeding up microbial decay. More information about maintaining St. Augustinegrass lawns is available from the Texas Cooperative Extension publication L-5340, *Maintaining St. Augustinegrass Lawns*.

Applying excessive fertilizer also enhances thatch formation and makes the grass more at-



Figure 2. Southern chinch bug on St. Augustinegrass blade.

tractive as a food source for chinch bugs. No more than 3 to 4 pounds of nitrogen per 1,000 square feet should be applied each year to St. Augustinegrass in sunny locations. Grass in shady sites needs no more than 2 pounds of nitrogen per 1,000 square feet each year. Organic, or slow-release, fertilizers reduce the risk of over-fertilization because they release nitrogen more slowly. Local nursery professionals or your county Extension office can provide more information on soil sampling and determining the proper amount of fertilizer to use on your lawn.

Too little or too much water also can cause chinch bug problems. Chinch bugs prefer hot, dry environments. Dry weather enhances survival of chinch bug nymphs and eggs by reducing the incidence of disease within chinch bug populations. Also, drought-stressed lawns are more susceptible to chinch bug injury. On the other hand, over-watering causes saturated, oxygen-deprived soils that cannot sustain the microbes needed to decompose thatch.

St. Augustinegrass lawns should be watched closely during the summer for signs of drought stress. The lawn should be watered immediately when edges of grass blades begin to curl, grass fails to spring back quickly when walked on, or the turf begins to have a dull bluish-gray color. Due to the various soil types and depths in Texas, the amount of water needed will vary. Whenever

possible, apply enough water to wet the soil profile approximately 6 inches deep and let it dry out between irrigations. Frequent watering promotes shallow root systems in St. Augustinegrass, making it more susceptible to injury by chinch bugs (Figure 2).

Resistant varieties

The most commonly planted St. Augustinegrass varieties (including "Texas common" and "Raleigh") are highly susceptible to chinch bug attack. "Floritam," an improved cultivar of St. Augustinegrass, no longer appears to be resistant to chinch bugs which means that currently there are no commercially available chinch bug-resistant varieties of this grass.

Biological control

Chinch bugs are attacked by many predatory and parasitic insects. Examples include big-eyed bugs (in the genus *Geocoris*), minute pirate bugs (genus *Xylocoris*), spiders, wasps and ants. Repeated insecticide applications can reduce populations of these predators and actually increase chinch bug numbers. To preserve beneficial insects, apply insecticides only when necessary.

New varieties of insect-pathogenic fungi are currently being selected and tested for chinch bug control. For example, *Beauveria bassiana* has shown potential for controlling many pests. Currently, however, there are no consistently effective fungal controls for chinch bugs. Likewise, beneficial nematodes have provided inconsistent results when used on these pests. For homeowners who want to avoid using any chemicals on their lawn, however, these products may provide some control.

Chemical control

Good cultural practices include water and fertility management, and thatch control. They dramatically reduce the need for insecticides to control chinch bugs. However, when dead and dying zones of turfgrass have chinch bugs, some corrective action is needed. While chemical insecticides can rapidly reduce chinch bugs when used according to label directions, most labeled materials do not last long and may require repeat application.

First determine whether a problem truly exists when considering pesticides for chinch bug control. If your neighborhood is prone to chinch bug problems, inspect your lawn weekly during the spring, summer and fall. Look for off-color areas, especially in direct sun, and along sidewalks and driveways. When there are numerous chinch bugs, they will cause grass to yellow. You can often find them by parting the grass at the edge of affected areas and by examining the soil and base of the turf. (See "Tips for Professionals" on page 5.) You should check areas with suspected infestations several times. When chinch bugs are numerous, you might see them on leaves or scurrying about on adjacent sidewalks during the day.

Insecticides can prevent further injury when chinch bugs are abundant enough to cause visible damage. A variety of liquid and granular insecticides is available for chinch bug control. Granular insecticides can be applied with a standard fertilizer spreader and irrigated lightly ($\frac{1}{8}$ - to $\frac{1}{4}$ -inch of water) to activate the insecticide. Drop-type spreaders are good for keeping insecticide granules from scattering into gutters, sidewalks and driveways. There they can be washed into storm drains and streams which is why you should sweep up and properly reapply any granules landing in such sites.

Liquid sprays are usually applied using a hose-end sprayer that can apply 15 to 20 gallons of water per 1,000 square feet. To ensure even coverage, spray back and forth across the same area. Watering the lawn before application can help the pesticide penetrate the turf, but irrigation is not recommended following application of liquid insecticides.

Use spot treatments where chinch bugs are restricted to isolated areas of the lawn. Treat the off-color turf and all surrounding infested areas. Inspect the site every 3 to 5 days for at least 2 weeks to determine if the infestation is under control. Spot treatments help prevent environmental contamination. They also minimize the impact of pesticides on beneficial insects.

Products that provide satisfactory control of chinch bugs include those containing carbaryl or any of the pyrethroid insecticides, such as bifen-

thrin (some Scotts® and Ortho® brands), cyfluthrin (Bayer brands), lambda-cyhalothrin (Spectracide® brands) or permethrin (e.g., Green Light® and Spectracide®). Resistance to the insecticide bifenthrin has been identified among southern chinch bugs in parts of Florida, but has not yet become a problem in Texas.

Safety precautions

Always wear appropriate clothing when applying pesticides. For example, use unlined, chemical-resistant gloves whenever mixing liquid pesticides. Allow treated areas to dry thoroughly before permitting people or pets to walk or play on them. In addition, always check the label for information concerning safe re-entry times as well as what protective clothing should be worn. Minimal protective clothing includes long pants, shirt, shoes and socks.

Check pesticide label directions for special instructions on disposal of empty containers. Never dispose of unused pesticides down storm sewers, toilets or sinks. This pollutes the environment and can cause costly cleanups for your community. Take care of pesticide spills immediately. Should any pesticide threaten to enter a storm drain, stream or lake, call the Texas State Environmental Emergency Response Hotline at 1-800-832-8224.

For Our Safety

All pesticides are potentially hazardous to human health and the environment.

As a pesticide user, you are legally required to read and carefully follow all directions and all safety precautions on the container label. Label instructions are subject to change, so read the label carefully before buying, using and disposing of any pesticide. Regardless of the information provided in an Extension publication, always follow your product's label.

When in doubt about any instructions, contact your pesticide seller, or the manufacturer listed on the label, for clarification. All pesticides should be stored in their original labeled containers and kept out of the reach of children. Never pour leftover pesticides down a storm drain or any other drain.

Tips for Professionals



Damage normally appears when there are approximately 20 to 25 chinch bugs per square foot. Dead spots in turf that are not associated with high numbers of chinch bugs are probably caused by some other factor. Check whether lack of irrigation, white grub feeding or turfgrass disease might be causing the damage.



Flotation is an alternative method to detecting and estimating chinch bug numbers (other than simply parting the grass and looking for the insects). After removing the top and bottom lids of a coffee can, push it into the ground with a twisting motion. Use a knife, if necessary, to cut the grass around the rim. Fill the can with water for about 10 minutes and check for chinch bugs as they float to the surface. For 4-inch diameter coffee cans, damaging numbers of chinch bugs are present when you have an average of more than 2 bugs per sample. For a 6-inch diameter can, an average of 4 to 5 chinch bugs or more per sample would indicate damaging numbers. Several samples should be taken from different locations in the damaged (but not dead) grass.



Big-eyed bugs often are mistaken for chinch bugs. These insects are beneficial predators that kill chinch bugs and many other pests. Although similar in size to chinch bugs, big-eyed bugs have large, protruding eyes and a head at least as wide as the thorax (the leg-bearing part of the body). Chinch bugs have smaller heads and eyes, and more slender bodies. Big-eyed bugs lack the chinch bug's distinctive white wings with black triangular markings.



Additional labeled pesticides for professionals include bifenthrin (e.g., Allectus™, Talstar®, Menace™ and Onyx™), cyfluthrin (Tempo®), cypermethrin (e.g., Pro-Build™), deltamethrin (DeltaGard®), imidacloprid for suppression only (Merit®), permethrin (Astro®, Permethrin Pro) and trichlorfon (Dylox®).



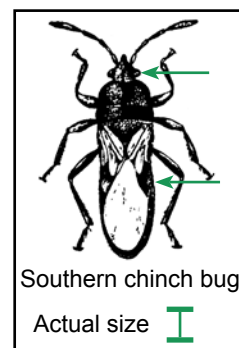
Using surfactants in spray solutions may enhance control, especially in turf with heavy thatch.



Regular, light top dressing of turfgrass with compost, or soil similar to the existing soil, can help lessen thatch problems.



In turfgrass that is regularly infested with chinch bugs, use organic, or slow-release, nitrogen sources and try lowering the rate of applied nitrogen. Lower rates of nitrogen (e.g., 2 pounds of nitrogen per 1,000 square feet per year) make grass less attractive to chinch bugs and can reduce the need for sprays.



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