



Chinch Bugs in St. Augustine Lawns

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The southern chinch bug, *Blissus insularis*, is one of the most important insect pests of St. Augustine-grass in Texas. Although most damaging in Gulf Coast regions and in the southern half of the state, chinch bugs can be a problem anywhere St. Augustinegrass is grown.

Although the southern chinch bug is a serious pest only on St. Augustinegrass lawns, it occasionally may feed on zoysiagrass, centipedegrass, bahiagrass, or bermudagrass. The common chinch bug, *Blissus leucopterus*, 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.



Adult southern chinch bugs are small and slender, $\frac{1}{6}$ to $\frac{1}{5}$ of an inch long. They have black bodies with white wings. Each wing bears a distinctive, triangular black mark. Normally, some of the adults at any given site will have full-sized, functional wings, whereas other individuals will be short-winged and incapable of flight (see the *Tips for Professionals* section for distinguishing chinch bugs from the common beneficial insect, the big-eyed bug). Recently hatched nymphs (immatures) 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. Chinch bugs are found most readily in the weakened, yellowing grass around a dead spot in the lawn.

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 (Fig. 1).

Chinch bug damage can be confused with certain lawn diseases or other physiological disorders. 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. Detection of significant numbers of the insects themselves is the best proof that chinch bugs are the cause of the damage.

Biology and habits

In Texas, adult chinch bugs are inactive during the winter. Reproduction begins after the appearance of warm weather in the spring. Under optimal conditions, each female can deposit up to 300 eggs, which



Figure 1. Chinch bug damage on lawn.

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hatch in about 2 weeks. The nymphal stage lasts about 30 days (less during hot weather), while the entire life cycle lasts 7 to 8 weeks. This speed of development allows time for three to five chinch bug generations each year. However, as the season progresses generations tend to overlap heavily, with the result that all stages normally are found together.

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

Managing chinch bugs

Cultural controls

Control of chinch bugs starts with proper lawn care. Keeping thatch to a minimum, for example, reduces chinch bug numbers and makes 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. Thatch provides a protective home for chinch bugs, and chemically binds with many insecticides, making such controls less effective.

Excessive thatch forms when soil microbes are unable to break down dead plant material as fast as it is added. Proper mowing practices can help reduce thatch build up. 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 no less often than once a week during the growing season. Mulching- or recycling-type mowers tear grass clippings into small pieces that are decomposed more easily by soil microbes. Research has shown that proper use of mulching mowers reduces the need for fertilizers and does not contribute to excessive thatch.

When thatch exceeds 1 inch in thickness, it may be necessary to have your lawn “vertically mowed.” Vertical mowing (a method of physically removing thatch) can be performed by a professional lawn maintenance company or by doing it yourself. Vertical mowing can temporarily harm your lawn’s appearance because it destroys the tightly woven stolon system of St. Augustinegrass. Vertical mowers can be obtained through many equipment rental stores.

Lawn aeration, in combination with top-dressing, also can help reduce thick layers of thatch. Aeration is performed by punching holes in the turf to increase air and water penetration. Lawn aeration machines can be obtained from many equipment rental stores, or aeration can be performed by a professional lawn care company. Aeration, in combination with top-dressing, helps correct moderate thatch problems by increasing soil-to-thatch contact, thus speeding up microbial decay. For more information about maintaining St. Augustinegrass lawns, see Texas Agricultural Extension Service publication B-5088, “Home Lawns.”

Over-application of fertilizer also contributes to thatch formation and makes lawns more attractive as a food source for chinch bugs. No more than 3 to 4 pounds of nitrogen (N) per 1,000 square feet should be applied each year to St. Augustinegrass growing 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 Extension Service office can provide more information on determining the proper amount of fertilizer to use in 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. Also, drought-stressed lawns are more susceptible to chinch bug injury. On the other hand, over-watering results in 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 takes on a dull bluish-gray color. Due to the variety of soil types and depths in Texas, the amount of water needed will vary. Whenever possible, apply enough water to wet the soil profile to a depth of approximately 6 inches 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.

Resistant varieties

The most commonly planted St. Augustine-grass varieties (including ‘Texas common’ and ‘Raleigh’) are highly susceptible to chinch bug attack; however, research has identified several resistant types. The varieties ‘Floritam’, ‘Floralawn’, and ‘Floratine’ show varying degrees of resistance to feeding by chinch bugs. ‘Floritam’, however, is the only variety that is commonly sold in Texas. ‘Floritam’ generally provides a high level of resistance to both chinch bugs and St. Augustine decline (SAD), a virus disease; however, it should be planted only in the southern half of the Texas because of its lack of cold-hardiness. Residents of counties north of Houston and San Antonio should check with their local county Extension office to determine whether ‘Floritam’ is appropriate for their area.

Biological control

Chinch bugs are attacked by many predatory insects, such as big-eyed bugs (*Geocoris* spp.), minute pirate bugs (*Xylocoris* spp.), and ants. Repeated insecticide applications can reduce populations of beneficial organisms and actually lead to increased chinch bug numbers. To preserve beneficial insects, apply insecticides only when necessary.



Figure 3. Southern chinch bug on St. Augustine grass blade.

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

Chemical control

Good water and fertility management, thatch control, and use of resistant grass varieties dramatically reduce the need for insecticides to control chinch bugs. However, when dead and dying zones in turfgrass are accompanied by the presence of chinch bugs, some corrective action is needed. Chemical insecticides, when used according to label directions, can provide a rapid reduction in chinch bug numbers.

The first step when using pesticides for chinch bug control is to determine whether a problem truly exists. If your neighborhood is prone to chinch bug problems, inspect your lawn weekly during the spring, summer and fall months. Look for off-color areas, especially in direct sun, and along sidewalks and driveways. When chinch bugs are present in high enough numbers to cause grass to yellow, they can often be found by parting the grass at the edge of affected areas and examining the soil and base of the turf (see *Tips for Professionals* section). Several checks should be made in areas with suspected infestations. With heavy infestations, small numbers of chinch bugs may be seen walking on leaves or scurrying about on adjacent sidewalks on hot days.

When chinch bugs are abundant enough to cause visible damage, insecticide use can prevent further injury. A variety of liquid and granular insecticides is available to control chinch bugs. 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 recommended to avoid scattering insecticide granules into gutters, sidewalks and driveways, where the granules can be washed into storm drains and streams. Any granules landing in such sites should be swept up and reapplied properly.

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. Irrigation is not recommended following application of liquid insecticides. Watering the lawn before application can help the pesticide penetrate into the turf.

In cases where chinch bugs are restricted to isolated areas of the lawn, use spot treatments. 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 minimize the impact of pesticides on beneficials and help avoid environmental contamination.

Products containing diazinon, chlorpyrifos (Dursban®), or acephate (Orthene®) are suggested for homeowner applications. Chinch bugs have been reported with resistance to the above products in some areas of Florida; however, this has not been apparent in Texas. Where any of these products fail to provide control, apply a synthetic pyrethroid such as permethrin (e.g., Spectra-cide® Liquid Insecticide Spray).

Safety precautions

Always wear appropriate clothing when applying pesticides. Read the label to see what protective equipment should be worn. Minimal protective clothing includes long pants, shirt, shoes and socks. Unlined, chemical-resistant gloves are recommended whenever mixing liquid pesticides. Treated areas should be allowed to dry thoroughly before permitting people or pets to walk or play on the treated grass. Always check the label for information concerning safe re-entry times.

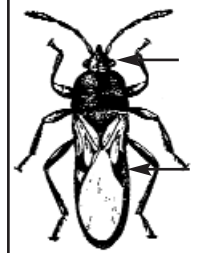
Some communities in Texas experience periodic sewage contamination due to improper pesticide use and disposal. Check label directions for special instructions on disposal of empty containers. Never dispose of unused pesticides down storm sewers, toilets, or sinks. This pollutes the environment and can result in costly cleanups for your community. Clean up 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.

Insecticide label clearances are subject to change, and changes may have occurred since this publication was printed. The pesticide USER is always responsible for the effects of pesticides on his own plants or household goods as well as problems caused by drift from his property to other properties or plants. Always read and follow carefully the instructions on the container label.


Tips for Professionals

✚ An approximate *action threshold* (level at which damage begins to appear) for chinch bugs on susceptible St. Augustinegrass varieties, (e.g., 'common' and 'Raleigh') is 20 to 25 chinch bugs per square foot.

✚ An alternative sampling method to simply parting the grass and looking for the insects is the *flotation method*. A coffee can (with the top and bottom lids removed) should be pushed 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. Action thresholds for samples taken with 4-inch and 6-inch diameter coffee cans are an average of two, and four to five chinch bugs per sample, respectively. Several samples should be taken from different locations in the damaged (not dead) grass.

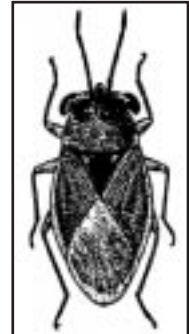


Southern chinch bug.


Actual size 

✚ Big-eyed bugs closely resemble, and often are mistaken for, chinch bugs. Big-eyed bugs 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 small heads (narrower than the thorax); eyes are small in proportion to the head; and their bodies are more slender. Big-eyed bugs do not have the distinctive white wings with black triangular marks that chinch bugs have.

✚ Additional labeled pesticides for professionals include bendiocarb (Ficam®, Turcam®), bifenthrin (Talstar®), ethoprop (Mocap®, golf courses only), fonofos (Crusade®, Mainstay®), imidacloprid (Merit®), isofenphos (Oftanol®), lambda-cyhalothrin (Scimitar®*, Battle®*), and permethrin (Astro™). Resistance of chinch bugs to organo-phosphate insecticides has been reported in other states. In case of suspected resistance, rotate to another class of insecticide. Note that diazinon may not be applied to golf courses or sod farms.



Big-eyed bug.

Actual size 

✚ Use of 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) have been shown to make grass less attractive to chinch bugs and can reduce the need for sprays.

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