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Chinch Bug Management in Lawns

Wizzie Brown and Molly Keck*

The southern chinch bug, *Blissus insularis* (Fig. 1), is one of the most important insect pests of St. Augustinegrass in Texas, causing the most damage in the Gulf Coast region and the southern half of the state.

Figure 1. Adult southern chinch bug.
Source: David Shetlar, The Ohio State University, Bugwood.org

Although it is a serious pest only on St. Augustinegrass lawns, the southern chinch bug 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.

Identification

Expanding, irregular patches of dead or stunted grass surrounded by a halo of yellowing, dying grass often provide the first clue of chinch bug presence (Fig. 2). These areas 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, and it may be more common in the hottest areas of the lawn, such as next to driveways or sidewalks, up against brick exteriors, or where irrigation is lacking.

Chinch bug damage can be confused with other insect problems, 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.

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 insect, disease, or environmental factors. Check for white grubs, fungal diseases, or drought stress.

Adult southern chinch bugs are small and slender, measuring almost ¼ inch long. They have black bodies

Figure 2. Chinch bug damage in a St. Augustinegrass lawn

*Senior Extension Program Specialists, Texas A&M AgriLife Extension Service

with white wings, each of which bears a distinctive, triangular black mark. Normally, some of the adults at any given site have full-sized, functional wings, while others have short wings and cannot fly. Recently hatched nymphs are wingless, yellow, or pinkish-red with a light-colored band across their backs (i.e., abdomens). After each molt, 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.

Mated female chinch bugs can lay up to 250 eggs over their lifetime. Eggs hatch in approximately 2 weeks. The nymphal (i.e., 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 can be 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.

Figure 3. Big-eyed bug

Big-eyed bugs are often mistaken for chinch bugs. These bugs are beneficial predators that kill chinch bugs and other pests. Chinch bugs and big-eyed bugs are similar in size, but big-eyed bugs have a head as wide (or wider) than their thorax along with large, protruding eyes (Fig. 3). Big-eyed bugs also do not have black and white wings like chinch bugs. Chinch bugs have smaller heads and eyes as well as more slender bodies (Fig. 4).

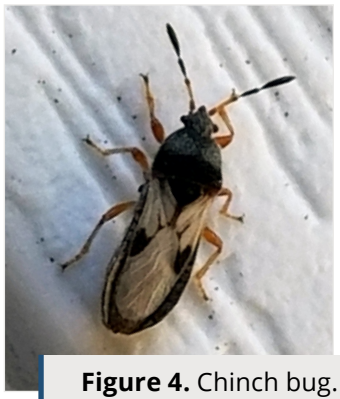

Figure 4. Chinch bug.
Source: Bradley Higbee, Paramount Farming, Bugwood.org

Cultural Control

Managing chinch bugs begins with proper lawn care. Reducing thatch 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. It provides a protective home for chinch bugs and can capture 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 ⅓ of the grass height 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. Proper use of mulching mowers can reduce the need for fertilizers and, as a result, reduce the build-up of excessive thatch.

When thatch is more than 1 inch thick, it may be necessary to have the lawn "vertically mowed." This method of physically removing thatch can be done by individual homeowners or by a professional lawn maintenance company. Vertical mowing can temporarily harm a 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 so the lawn can recover more quickly. Vertical mowers are available at many equipment rental stores.

Lawn aeration, in combination with the 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. Homeowners can buy lawn aeration machines 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.

Applying excessive fertilizer enhances thatch formation and makes the grass more attractive as a food source for chinch bugs. Organic, or slow-release, fertilizers reduce the risk of over-fertilization because they release nitrogen more slowly.

Too little or too much water can also cause chinch bug problems. Chinch bugs prefer hot, dry environments. Dry weather enhances the 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 when the 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.

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, broad insecticide applications can reduce populations of these predators, which can lead to increased chinch bug numbers. To preserve beneficial insects, apply insecticides only when necessary and target the treatment area.

The insect-pathogenic fungi *Beauveria bassiana* may be able to control chinch bugs under certain environmental conditions. Being a fungus, these products require humid conditions to cause an outbreak, and they work best on smaller stages. Beneficial nematodes have provided inconsistent results when used on these pests.

Chemical Control

First determine whether a problem truly exists when considering pesticides for chinch bug control. If the local neighborhood is prone to chinch bug problems, one should inspect their 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. One can often find chinch bugs by looking in the yellowing areas, parting the grass at the edge of affected areas, and examining the soil and base of the turf. When chinch bugs are numerous, they might be seen on leaves or scurrying about on adjacent sidewalks during the day.

Floatation is another method of detecting chinch bug presence. Use a cylinder-shaped object, such as a large can, of at least 4 inches in diameter and 6 inches in height. Push the can down into the turf for several inches using a twisting motion. Use a knife to cut the grass around the rim of the can if necessary. Fill the cylinder with water for 10 minutes and check for chinch bugs as they float to the surface. For 4-inch diameter cans, damaging numbers of chinch bugs are an average of more than 2 bugs per sample. For 6-inch diameter cans, damaging numbers of chinch bugs are an average of more than 4 to 5 bugs per sample. Take multiple samples in different locations in the yellowing/damaged, but not dead, grass.

Insecticides can prevent further injury when chinch bugs are abundant enough to cause visible damage. A variety of liquid and granular insecticides are available for chinch bug control. Granular insecticides can be applied with a standard fertilizer spreader and watered in according to label instructions. Sweep up any insecticide granules that scatter into gutters, sidewalks, and driveways, so they are not washed into storm drains and streams.

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 the application of liquid insecticides.

To help conserve beneficial insects, only treat areas where chinch bugs are located and a few feet out from the yellowing area. Inspect the site at 5 days and 12 days to determine if the infestation is under control.

There are two basic categories of how pesticides can kill chinch bugs: contact and ingestion. Neonicotinoids (i.e., imidacloprid, clothianidin, and thiamethoxam) are taken into the turf, and the insect ingests a dose of the pesticide when it feeds. Pyrethroids (i.e., bifenthrin, cyfluthrin, lambda-cyhalothrin, permethrin, and deltamethrin) kill insects when they come into contact with the product either by being sprayed during application or moving across turf that has been treated. Other products can kill by contact or ingestion via turf, such as those with the active ingredient chlorantraniliprole. Make sure to read and follow all label instructions.

There are reports of resistance to the insecticide bifenthrin in southern chinch bugs, so if a bifenthrin product does not work, switch to a new active ingredient.