



## Chinch Bugs

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### DO YOU KNOW

- Chinch bugs are occasional pests of turfgrass in Utah.
- Chinch bugs feed on a variety of turfgrass species including Kentucky bluegrass, perennial ryegrass, the fescues, bentgrass and zoysiagrass.
- Damage is usually heaviest in sunny locations during hot, dry periods.
- Sound cultural (non-chemical) practices are the best defense against chinch bug damage.

### INTRODUCTION

Chinch bugs (Fig. 1) are "true bugs". In Utah, the common chinch bug [*Blissus leucopterus leucopterus* (Say)], and western chinch bug (*Blissus occidentus*) may feed on turfgrass, especially under conditions of severe heat and drought. Coupled with under-irrigation, direct sunlight, and thick thatch, chinch bug numbers can soar from mid-summer to early fall.

### BIOLOGY

Adults overwinter in thatch, clumps of grass, next to buildings and along the edges of sidewalks. They emerge in early spring to mate (when temperatures reach 70°F). Females insert eggs on underground roots, behind leaf sheaths in the crowns of turf plants, in the folds of grass blades, or in the thatch. Eggs hatch in mid to late spring with development of immature stages requiring approximately 1 month.

Adults of the first summer generation begin to appear in early to mid summer. Eggs of the second summer generation hatch approximately 1 month later and complete development in early to mid fall. Adults of

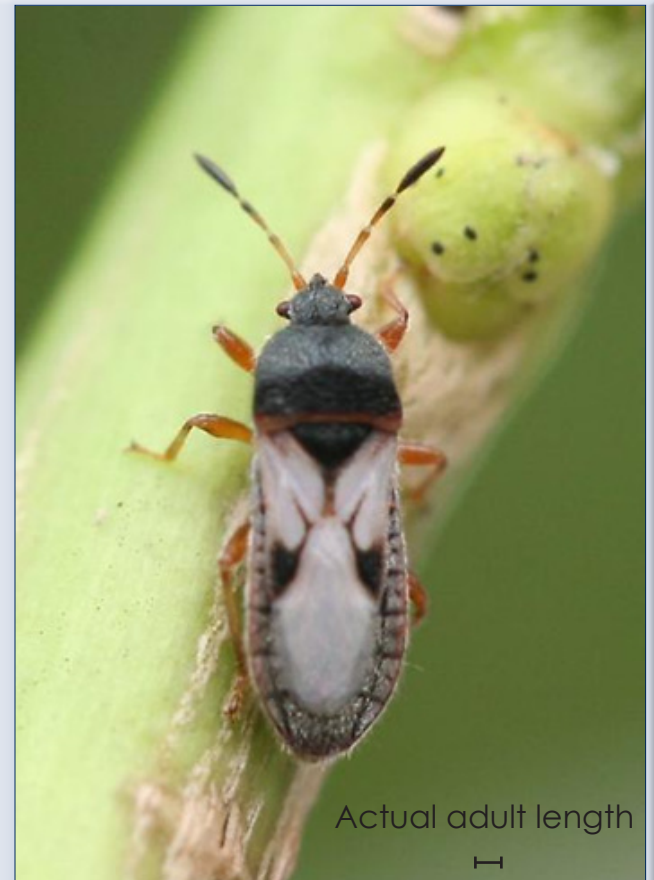


Figure 1. Adult chinch bug.

this generation move to overwintering sites as temperatures cool in the fall.

### IDENTIFICATION

Chinch bugs go through numerous developmental stages (Fig. 2). First stage nymphs of the common chinch bug are tiny (1/64 in) and bright red with a white band across the abdomen (Fig. 2). As they mature through five nymphal stages, they turn orange-brown and then black. Adults are black (1/10 in long) and white with fully developed wings that fold over the back and extend to the end of the abdomen (Figs. 1 & 2). This creates a black triangle pattern behind the pronotum

Actual adult length



Figure 2. Immature (nymph) and adult chinch bugs.



Figures 3 & 4. Chinch bug look-alikes. Big-eyed bug (top); minute pirate bug (bottom). Both insects are beneficial predators.

("shoulders"), pointing toward the rear. Some populations of adult chinch bug have reduced-sized wings as adults. When crushed, chinch bugs emit a foul odor like stink bugs (Vittum et al., 1999).

There are several look-alike insects that can also be found in turf. Both big-eyed bugs (Fig. 3) and minute pirate bugs (Fig. 4) are beneficial predators and should be preserved. False chinch bugs also appear similar to chinch bugs but rarely occur in turfgrass in Utah.

## DAMAGE

Chinch bugs damage turfgrass leaves with piercing-sucking mouthparts, inhibiting transport of water within the plant. Patchy dieback is followed by larger areas of damage. In severe cases, complete lawn loss may occur (Fig. 5). Chinch bug feeding damage can often resemble drought stress; damage is often worse on plants that are already affected by drought. Chinch bug damage will not respond to increased watering as a drought-affected lawn would.

Chinch bugs and their damage generally occur in scattered patches in turfgrass. Populations may reach 200 to 300 bugs per square feet in heavily infested, sunny areas. Damage is typically visible from late June through August when the older summer generation nymphs and adults are feeding (Niemczyk and Shetlar, 2000). Damage may be seen earlier in southern Utah.



Figure 5. Severe chinch bug damage may lead to complete loss of turfgrass.

## MONITORING

### Hands-and-Knees Method

The simplest method for detecting and monitoring chinch bugs is the “hands and knees” method. Using your thumbs and fingers, pull back grass stems to expose the crowns and thatch where chinch bug adults and nymphs may be hiding. The nymphs are very tiny, however, and may be easily overlooked (Fig. 6). As conditions become warm and drier, chinch bugs may move deeper in the thatch. Because they are so small, a hand lens or magnifying glass may be needed to see them. Visual observation of driveways and sidewalks adjacent to damaged turf areas on hot afternoons often reveals adult chinch bugs running across the pavement. Adult chinch bugs may also be observed crawling on the sides of light-colored buildings under these conditions. Chinch bugs should not be confused with similar looking, beneficial insects like minute pirate bugs and big-eyed bugs (Figs. 3 & 4).



Figure 6. Chinch bug nymphs are very small and easily overlooked.

### “Floatation” Trap

A “floatation,” trap to monitor chinch bugs can be made from a 6-inch diameter coffee can or similar object with both ends removed to create a metal cylinder. Push the can into the soil approximately 2 to 3 inches deep, enclosing the turf and fill the can about  $\frac{3}{4}$  full of water. Poke or stir the turf and thatch that is under water keeping a constant depth of water in the can for about 10 minutes by pouring in extra water to replace the lost/leaching water. Count the number of chinch bugs that float to the surface.

## CONTROL

### Cultural Control

Emphasizing healthy turf is recommended to discourage chinch bug infestations. Use the following cultural control methods to minimize chinch bug damage:

- Aerate once or twice per year to reduce thatch, especially in lawns prone to thatch development.
- If chinch bug damage is not severe, adequate irrigation and light fertilization applications can encourage turfgrass recovery and tolerance (Potter, 1998).
- Encourage moist soil to foster the growth of *Beauveria* fungus, a natural biotic pathogen of chinch bug. Conversely, application of fungicides

may suppress *Beauveria* and favor the build up of chinch bug populations.

- Fertilize regularly to impart some resistance of turfgrass to chinch bug damage.
- Plant or overseed turf with endophyte-enhanced cultivars of perennial ryegrass, fine-leaf fescue or tall fescue which are resistant to chinch bugs and common turf diseases.
- Kentucky bluegrass lawns with a high percentage of non-endophytic fine-leaf fescue and/or perennial ryegrass, and lawns with excessive thatch, are especially susceptible to chinch bug damage (Potter, 1998).

## Chemical Control

A number of insecticides are labeled for control of chinch bug in Utah. For homeowners, there are several active ingredients such as bifenthrin, lambda-cyhalothrin, cyfluthrin and imidacloprid that are available. For commercial applicators, in addition to active ingredients available for homeowners, clothianidin (Arena; non-restricted use) and several restricted-use products that typically contain a combination of pyrethroids and neonicotinoids are also available (Aloft, Allectus).

With curative products, typically pyrethroids (e.g., bifenthrin), the goal is to cover turfgrass stems and the upper thatch layer so that the chinch bugs are controlled by direct contact. Preventive treatment, using systemic products like

neonicotinoids (e.g., imidacloprid) that move into the plant, is generally not warranted as chinch bugs rarely cause sufficient damage in Utah. If chinch bugs are positively identified as the cause of severe damage, then spot-treatment of infested areas is a better option to control their population.

Turf insecticides may come in liquid or granular form. With liquid formulations, irrigation should be avoided for several days after application to allow the insecticide to contact the blades of grass and thatch where chinch bugs reside. Some labels may, however, recommend light irrigation to move liquid insecticides down into the thatch layer. If the thatch and soil are very dry, irrigating on the day prior to insecticide application may be warranted. When using granular formulations, the foliage should be dry so that the prills do not stick to the leaves and reach stems and the upper thatch layer. Light irrigation following granular insecticide application is recommended (Potter, 1998).

## Treatment Thresholds

Infestations of 20 to 25 nymphs per square foot are generally considered damaging enough to warrant control. Using the "floatation" technique mentioned above, estimate the number of nymphs found per square foot based on the area covered by the can. If nymph numbers are below this threshold, regular irrigation and fertilization can mitigate chinch bug damage.

## IMAGES & REFERENCES

**Figure 1.** Image courtesy of Graham Montgomery, Cornell University.

**Figure 2.** Image courtesy of Samuel Abbott, Utah State University.

**Figures 3&4.** Images courtesy of Bradley Higbee, Paramount Farming, Bugwood.org.

**Figure 5.** Image courtesy of Katie Wagner, Utah State University Cooperative Extension, Salt Lake County.

**Figure 6.** Image courtesy of Natalie Hummel, Louisiana State University AgCenter.

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