SOUTHERN CHINCH BUG:
Biology and Management in Turfgrass

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The southern chinch bug (Figure 1), *Blissus insularis* Barber, is an insect pest of turfgrass, especially St. Augustinegrass, in Georgia. Bermudagrass, centipedegrass, and zoysiagrass are also attacked by southern chinch bug. They feed on grass using their piercing and sucking mouthparts. Affected turfgrass can form yellow to brown patches that are sometimes mistaken as indicators of disease or drought stress. Populations of southern chinch bug can build up at the edges of these patches at over 100 individuals per square foot, which can kill the affected grass (Figure 2). The development of southern chinch bug in the grass can easily go unnoticed because of their small size and dark-gray color, which blends in with thatch.

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

Figure 2. Damaged turfgrass from southern chinch bug feeding.
Photo: David Shetlar, The Ohio State University, Bugwood.org

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Biology of the southern chinch bug

Southern chinch bug is a true bug with distinct life stages: egg, five nymphal stages, and adult (Figure 3). The southern chinch bug deposits eggs between the leaf blade and the stem of turfgrass in late March to September. A female can lay about five eggs per day, with up to 100-289 eggs produced during its lifetime. When air temperatures are 83 ºF, eggs can hatch in nine days. But when air temperatures are cooler, it may take 25 days at 70 ºF. Eggs are oval-shaped and elongated, ranging from 0.75-0.8 millimeters (mm) long and 0.23-0.25 mm wide. The color of the egg changes from white when freshly deposited to orange just before hatching.

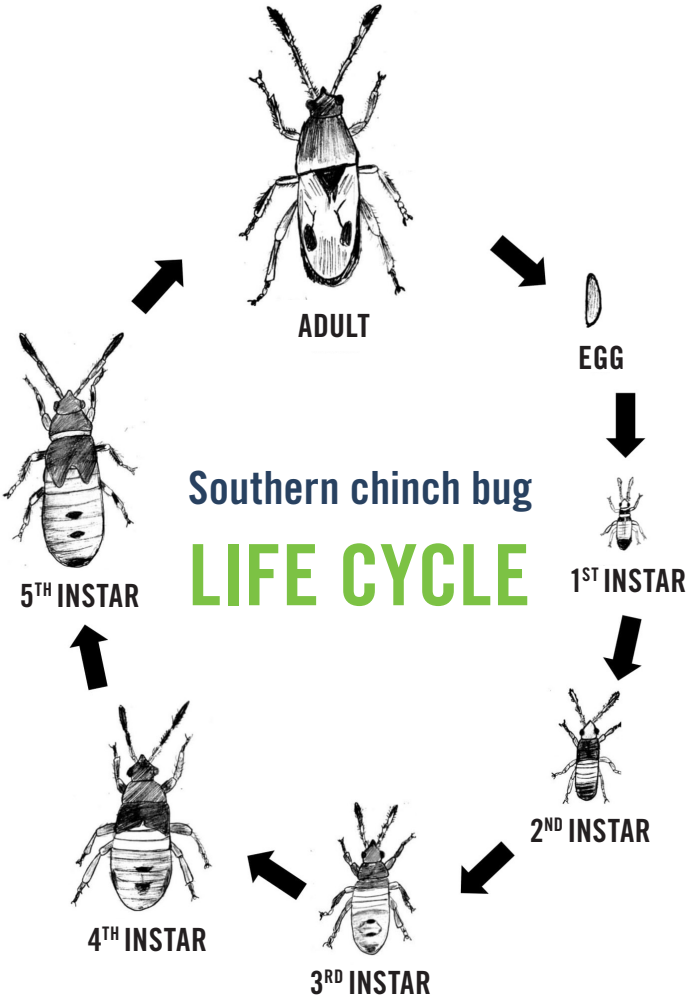

Figure 3. The life cycle of the southern chinch bug.
Illustration by Faward Khan and Shimat Joseph

Nymphal stages can be differentiated by variation in color and markings on their body. The first nymphal stage is characterized by nymphs with an orange-brown head, brown thorax, and bright-orange abdomen with a distinct cream-colored band. From the second nymphal stage onward, the color on all body segments gradually darkens. The head and thorax become dark brown. The abdomen color gradually turns from an orange shade to dark gray. The size of the fourth nymphal stage is more than double the size of the first nymphal stage (about 2 mm long). The fifth nymphal stage has distinct wing pads and is darker compared to the fourth nymphal stage. The fifth nymphal stage is about 3 mm long. An occasional sixth nymphal stage may develop during the cool weather. The abdomen develops darker spots with a blue-black color, and the size is almost the same as that of the fifth nymphal stage. The nymphal stages can live up to 40-50 days depending on the ambient temperature.

The adult stage can easily be identified through well-developed wings. The female chinch bug is larger in size compared to the male. Females can live for 70 days, whereas males live for around 40 days. It takes 35 and 93 days at 83 ºF and 70 ºF, respectively, to develop from egg to adult. Population growth can be rapid in the hot, dry summer months. Because of a considerable overlap in generations, all stages are usually found during the summer months in Georgia. Populations of chinch bugs increase with the amount of thatch. The southern chinch bug is reported to form dense aggregations, especially under its preferred St. Augustinegrass canopy. The chemistry within the plant and produced by the insect both play an essential role in the aggregation behavior of the southern chinch bug.

Host plant resistance

The southern chinch bug has been successful in overcoming different management tactics, including insecticide applications and host plant resistance. Different cultivars of St. Augustinegrass, previously considered resistant, have later become susceptible to varying levels of infestation in certain regions of the Southeastern U.S. The cultivars ‘FX-10’ and ‘Captiva’ are resistant to southern chinch bug based on recent research. Other susceptible cultivars include ‘Floratam’, ‘Seville’ and ‘Raleigh’, but ‘Raleigh’ is the only commercially available cultivar in Georgia.

Biological control

Bigeyed bugs (Figure 4), *Geocoris* spp., are an important predator of the southern chinch bug. It has larger eyes and is wider than the southern chinch bug. Other reported predatory bugs, including *Lasiochilus pallidulus*, warehouse pirate bug, *Xylocoris vicarious* (Hemiptera: Anthocoridae), and some generalist assassin bugs also play a role in keeping check on the chinch bug population. Predatory earwigs and imported red fire ants also help prevent outbreaks of southern chinch bug populations. Certain other materials, such as *Beauveria bassiana*, a fungi that attack insects, can be used to control southern chinch bugs as long as the thatch and soil remain moist.

The parasitic wasp *Eumicrosoma benefica* is an important natural enemy of southern chinch bug in other parts of the Southern U.S., but it has yet to be confirmed in Georgia. The year-round activity of *E. benefica* has reportedly curbed the populations of southern chinch bug in Florida. It is critical to conserve natural enemies of southern chinch bugs by avoiding broad-spectrum insecticides and by using proper cultural practices and resistant cultivars.

Figure 4. Aptly named, the bigeyed bug has larger eyes than the southern chinch bug.
Photo: Bradley Higbee, Paramount Farming, Bugwood.org

Chemical management

Most of the chinch bug population is found in the thatch area, with few bugs venturing up to the canopy. Sampling chinch bugs through the floatation method is an easy way to determine whether there is a chinch bug presence in the grass (Figure 5). To implement the floatation method, a can or 4-inch PVC pipe with both the top and bottom cut out is inserted up to 3 inches deep into the soil at the edge of the dead grass where chinch bugs are suspected. Tap water is added to the can so that chinch bugs, if present, will float to the water surface. An insecticide application is warranted if more than three chinch bugs are found in the floatation sample. A simple surface view of the grass is not enough to predict the population size of this small pest. The southern chinch bug remains active in all warm months of the year. Pyrethroids, carbamates, and organophosphates are generally employed for the management of this pest. Insecticidal resistance has been problematic with chinch bugs, so rotating chemical treatments and avoiding multiple applications of the same insecticide is recommended to slow the development of resistance. According to some reports, a combination of a pyrethroid with neonicotinoid insecticides has resulted in successful management (for example, using bifenthrin, clothianidin and imidacloprid). Nonetheless, some populations of southern chinch bugs have developed resistance to most commonly used insecticides including imidacloprid, bifenthrin, lambda-cyhalothrin, and deltamethrin. However, it is less likely that all the southern chinch bug populations have developed resistance to these insecticide classes.

Figure 5. Floatation method to determine presence of southern chinch bug.
Photo originally from "Bug Hunter – Turfsampling," Texas A&M AgriLife Extension.

Further reading:

Addesso, K. M., Mcauslane, H. J., & Cherry, R. (2012). Aggregation behavior of the southern chinch bug (Hemiptera: Blissidae). *Environmental Entomology*, 41(4), 887-895.Anderson, W. G., Heng-Moss, T. M., Baxendale, F. P., Baird, L. M., Sarath, G., & Higley, L. (2006). Chinch bug (Hemiptera: Blissidae) mouthpart morphology, probing frequencies, and locations on resistant and susceptible germplasm. *Journal of Economic Entomology*, 99(1), 212-221.

Cherry, R., & Nagata, R. (2005). Development of resistance in southern chinch bugs (Hemiptera: Lygaeidae) to the insecticide bifenthrin. *Florida Entomologist*, 88(2), 219-221.

Cherry, R., & Nagata, R. (2007). Resistance to two classes of insecticides in southern chinch bugs (Hemiptera: Lygaeidae). *Florida Entomologist*, 90(3), 431-434.

Cherry, R., Lu, H., & Roberts, P. (2015). Southern chinch bugs (Hemiptera: Blissidae) increase severity of plant disease in St. Augustinegrass. *Journal of Entomological Science*, 50(1), 28-34.

Cherry, R., Wright, A., Raid, R., & Luo, Y. (2011). Effect of fertilization on resistance of Captiva St. Augustinegrass to southern chinch bugs (Hemiptera: Blissidae) and gray leaf spot disease. *Journal of Entomological Science, 46*(2), 96-101.

Chong, J., Braman, S. K., & Waltz, F. C. (2009). St. Augustinegrass cultivar influences on southern chinch bug and predator populations. *J. Appl. Turfgrass Sci., 6*(doi: 10.1094/ATS-2009–1123-01-RS).

Kamminga, K., Kuhar, T. P., Shetlar, D. J., Brandenburg, R. L., & Laub, C. A. (2018). Economic pests of turfgrass, Identification Guide.

Kaur, N., Gillett-Kaufman, J. L., Gezan, S. A., & Buss, E. A. (2016). Association between *Blissus insularis* Densities and St. Augustinegrass Lawn Parameters in Florida. *Crop, Forage & Turfgrass Management, 2*(1).

Kerr, S. H. (1966). Biology of the lawn chinch bug, *Blissus insularis. The Florida Entomologis*t, 49(1), 9-18.

Milla-Lewis, S. R., Youngs, K. M., Arrellano, C. & Cardoza, Y. J. (2017) Tolerance in St. Augustinegrass germplasm against *Blissus insularis* Barber (Hemiptera: Blissidae). *Crop Science* 57, 26–36.

Potter, D. A., & Braman, S. K. (1991). Ecology and management of turfgrass insects. *Annual Review of Entomology*, 36(1), 383-406.

Reinert, J. A., Engelke, M. C., & Read, J. C. (2003, June). Host resistance to insects and mites, a review-A major IPM strategy in turfgrass culture. In *International Conference on Turfgrass Management and Science for Sports Fields* 661, 463-486.

Sutherland, A. M., Flint, M. L. & Harivandi, M. A. (2016) Southern Chinch Bug

UC IPM Pest Management Guidelines: Turfgrass. UC ANR Publication 3365-T

Watschke, T. L., Dernoeden, P. H., & Shetlar, D. J. (2013). *Managing Turfgrass Pests*. CRC Press.

Youngs, K. M., Milla-Lewis, S. R., Brandenburg, R. L., & Cardoza, Y. J. (2014). St. Augustinegrass Germplasm Resistant to *Blissus insularis* (Hemiptera: Blissidae). *Journal of Economic Entomology*, 107(4), 1688-1694.

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