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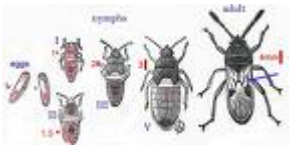
Chinch Bugs in Turfgrass



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There are several chinch bugs that attack turfgrasses in North America. The hairy chinch bug, is the most commonly encountered pest of northern turfgrasses.
The common chinch bug is normally found from South Dakota across to Virginia and south to a line running from mid-Texas across to mid-Georgia. The hairy chinch bug cohabits some of the northern range of the common chinch bug but also extends throughout the northeastern states and into southern Canada.
The hairy chinch bug prefers turfgrass species such as fine fescues, perennial ryegrasses, Kentucky bluegrass, bentgrass and zoysiagrass. The common chinch bug prefers grain crops such as sorghum, corn and wheat but will attack turfgrasses such as Bermudagrass, fescues, Kentucky bluegrass, perennial ryegrass, zoysiagrass and crabgrass.

Types of Damage

Chinch bug damage is usually first detected when irregular patches of turf begin to turn yellow then straw colored. The straw colored areas may be completely dead. These patches continue to become larger in spite of watering.
Apparently, feeding by chinch bugs blocks the water and food conducting vessels of grass stems. By blocking the water, the leaves wither as in drought and the manufactured food doesn't get to the roots. The result is plant death. Damage generally occurs during hot, dry weather from June into September.

Description of Stages

These pests are true bugs and have a gradual life cycle with egg, nymphal and adult stages. All the species of *Blissus* are very similar in form and an expert is needed to separate species and subspecies.

Eggs

The eggs are elongate, bean-shaped, approximately 0.84 mm long by 0.25 mm wide, and are roundly-pointed at one end and blunt at the other. The blunt end has several small tubercles visible through a dissecting microscope. The eggs are first white and change to bright orange just before hatching.

Nymphs

There are five nymphal instars which change considerably in color and markings. The first instar has a bright orange abdomen with a cream colored stripe across it, a brown head and thorax and is about 0.9 mm long. The second through fourth instars continue to have this same general color pattern except that the orange color on the abdomen gradually changes to a purple-gray with two black spots. The fourth instar increases to more than 2 mm long. The fifth instar is very different because the wing pads are easily visible and the general color is now black. The abdomen is blue-black with some darker black spots and the total body length is about 3 mm.

Adults

The adults are approximately 3.5 mm long and 0.75 mm wide. The males are usually slightly smaller than the females. The head, pronotum and abdomen are gray-black in color and covered with fine hairs. The wings are white with a black spot (the corium) located in the middle of the front-wing edge. The legs often have a dark burnt orange tint. Individuals in a population, or in some cases, most of a local population may have short, called brachypterous, wings which reach only half-way down the abdomen.

Life Cycles and Habits

The hairy chinch bug adults overwinter in the thatch and bases of grass stems in the turf. However, the common chinch bug prefers to move to tall bunch-grasses in open fields to find overwintering sites. These individuals then migrate in search of grain crops in the spring but may establish in turf instead. The adults of both species become active when the daytime temperatures reach 70 degrees F. The females feed for a short period of time and mate when males are encountered. Eventually the females begin to lay eggs by inserting them into the folds of grass blades or into the thatch. This usually occurs from mid-April into June, from New

York to Illinois. A single female may lay up to 200 eggs over 60-80 days. The eggs take about 20-30 days to hatch at temperatures below 70 degrees F but can hatch in as little as a week when above 80 degrees F. The young nymphs begin to feed by inserting their mouthparts in grass stems, usually while under a leaf sheath. The nymphs grow slowly at the beginning of the season because of cool temperatures but speed their development by July. Usually the first generation matures by mid-July. At this time considerable numbers of adults and larger nymphs can be seen walking about on sidewalks or crawling up the sides of light colored buildings. If a good, hot, dry spring is available, turf injury by the first generation can be evident by June. Damage may be visible from late-June through August when the spring generation mature nymphs and adults are feeding and the second generation of nymphs are becoming active. During the hot summer months, the new females lay eggs rapidly and their young may mature by the end of August into September. The second generation adults may lay a few eggs for a partial third generation if the season has been long. However, most of these late nymphs do not mature before winter temperatures drop. When cool temperatures arrive, the mature chinch bugs seek out protected areas to spend the winter.

Control Tactics

Chinch bugs are some of the oldest known insect pests native to North America. The first records of damage to crops are from the 1780s. Because chinch bugs are major crop pests, a large number of control strategies have been suggested. Since most of these control strategies have been used against the common chinch bug in field crop protection, only those useful for management of the hairy chinch bug in turfgrasses have been selected. Chinch bugs are relatively easy to control if they are detected early (see Sampling below).

Option 1: Cultural Control - Watering the Turf - Since this pest requires hot dry conditions for optimum survival and reproduction, irrigation during the spring and early summer may increase the incidence of pathogen spread, especially the lethal fungus, *Beauveria* spp. The adults can withstand water because of the protective hairs on the body but the nymphs readily get wet and can be damaged by large water droplets.

Option 2: Cultural Control - Use Resistant Turfgrasses - The hairy chinch bug seems to prefer perennial ryegrasses and fine fescues, especially if these are in the sun and have greater than 0.5 inch of thatch. Bentgrass is also attacked but this turf is rarely used in lawns. Bluegrass lawns with 50 percent or more ryegrass and/or fine fescue are the most likely to be attacked. In field tests, Yorktown, Yorktown II and Citation perennial ryegrasses are the most susceptible to chinch bug build up, while Score, Pennfine and Manhattan are avoided. Jamestown and Banner fine

fescues are more commonly attacked than FL-1, Mom Frr 25 and Mom Frr 33. In general, perennial ryegrasses, fine fescues and tall fescues with endophytes are highly resistant to this pest.

Option 3: Cultural Control - Recovery From Damage - Slightly damaged turf will recover rather quickly if lightly fertilized and watered regularly. Heavily infested lawns may have significant plant mortality because of the toxic effect of chinch bug saliva and reseeding will be necessary. Unfortunately, this often occurs when summer germinating weeds, especially crabgrass, are most active. Thus, additional controls for weeds may be necessary to reduce establishment of these undesirable plants.

Option 4: Chemical Control - Preventive Applications - In turf areas where chinch bugs have been a perennial problem, early insecticide sprays have been used to reduce the beginning spring population. This works well if applications are made in April or early-May after the adults have finished spring migrations and the young nymphs are just becoming active. It is highly recommended that preventive sprays be used only if sampling has been done to determine that chinch bugs are indeed present, especially if an unusually hot, dry spring has occurred.

Option 5: Chemical Control - Targeted Applications - Chinch bugs are rather easy to detect in turf and targeted insecticide applications can be applied to reduce populations which appear to be building to damaging levels.

Sampling

Several sampling schemes have been developed for determining chinch bug populations in turf. The simplest method is to visually inspect the turf by spreading the canopy. Chinch bug nymphs tend to hide in the deeper thatch and careful inspection is necessary. Unfortunately, eggs and small chinch bugs are easily missed using this technique. A more reliable method is to use the flotation technique, counting the number of adults and nymphs present over a 10 minute span. To use the flotation technique, cut the top lid out and the bottom lid and rim off a one gallon can. Twist the sharp edge of the can through the turf into the underlying soil. Fill the can with water. Refill if the water soaks into the ground before the 10 minute period. Populations of 25-30 individuals per square foot warrant control, especially if these numbers are encountered in June and July. More complicated sampling methods use repeated sampling over a long period of time, relating the population numbers to temperature and humidity parameters in order to predict future populations.

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