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## KEY POINTS

- The common chinch bug (*Blissus leucopterus*) is an economically important pest of grass field crops in the eastern High Plains of the U.S.
- Chinch bugs pierce vascular tissues of plants to feed on sap and secrete digestive enzymes that break down surrounding plant tissues.
- The greatest threat of economic damage from chinch bugs comes from the large migration of immature bugs from maturing wheat fields into nearby corn and sorghum fields that occurs in late-May to early June.

## DISTRIBUTION AND PEST STATUS

- The chinch bug (*Blissus leucopterus*) – often referred to as the common chinch bug – is an insect pest of grass crops that is native to North America and found throughout the U.S. and southern Canada.
- *B. leucopterus* is the most common species in the genus *Blissus*, all of which are referred to as chinch bugs, including the closely related southern chinch bug (*B. insularis*) and hairy chinch bug (*B. leucopterus hirtus*), both of which are primarily pests of turfgrass.
- *B. leucopterus* is an economically important pest of grass field crops in the eastern High Plains of the U.S. – particularly corn and sorghum – as well as small grains such as wheat and barley.
- Outbreaks of chinch bug can cause substantial yield loss in corn and sorghum if left uncontrolled.

## LIFECYCLE

- Chinch bugs have three life stages: egg, nymph, and adult, and typically go through two generations per year in the eastern High Plains.
- Adult chinch bugs primarily overwinter in grassy areas such as grass pastures, CRP acres, fencerows, and road ditches near fields that they infested during the prior summer.
- Their preferred overwintering sites are dense clumps of native warm-season bunchgrasses.
- Adults leave overwintering sites during the spring when temperatures rise above 70°F (21°C) for several consecutive days and fly to fields of small grains where they mate and lay eggs.
- In the eastern High Plains, chinch bugs typically lay the first generation of eggs in wheat because it is the most readily-available host, although they prefer barley and other grasses.



**Figure 1.** Adult chinch bugs (*Blissus leucopterus*).

- Females will lay eggs over a 2- to 4-week period. Females can lay up to several hundred eggs each, although the number of eggs laid can vary greatly from year to year.
- Eggs take 1 to 2 weeks to hatch, and newly hatched nymphs take around a month to reach full maturity. Nymphs molt five times before becoming adults.
- Chinch bugs move from wheat fields to nearby corn or sorghum fields in late May and early June – first a flight of adults when the wheat canopy closes and then a larger migration of both nymphs and adults as the wheat ripens.
- The migrating population consists mostly of nymphs, which do not have wings so must walk to nearby corn or sorghum fields.
- After moving into corn or sorghum, the nymphs feed on the plants and, once they reach adult stage, fly and disperse throughout the field before depositing eggs for the second generation.

## IDENTIFICATION

- Chinch bug eggs are oblong and tiny – typically less than 1 mm long. They are white to yellow when laid and darken to a reddish color before hatching.
- Eggs are laid individually but may be found in clusters. In small grain crops, they are deposited around the base of plants, behind lower leaf sheaths and at the crowns of plants near or just below the soil surface.
- Nymphs change in appearance with each molt – newly hatched nymphs are bright red, and they are red to brown with a white band across their backs through the first four instars.
- Fifth instar nymphs are nearly black, with the white band partially covered by the developing wings.

- Adult chinch bugs are about 3/16 inch (5 mm) long, with a black body and white wings that have a triangular black area in the middle of the outer margin, and dark yellow to reddish legs (Figure 1).

## INJURY SYMPTOMS AND IMPACT ON CROP

- Chinch bugs pierce vascular tissues of plants to feed on sap and secrete digestive enzymes that break down surrounding plant tissues.
- Feeding punctures can also serve as an entry point for plant pathogens

### Small Grains

- Healthy stands of winter wheat rarely experience economic levels of damage; whereas thin stands are more susceptible.
- Spring planted small grains – especially barley – can be heavily damaged when large populations survive the winter.
- Under heavy infestations, leaves will turn yellow, then brown, starting with the lower leaves and proceeding up the plant.

### Corn and Sorghum

- The greatest threat of economic damage from chinch bugs comes from the large migration of immature bugs from maturing wheat fields into nearby corn and sorghum fields.
- Sorghum is a highly preferred food source that is very susceptible to damage, particularly with later planting.
- Feeding begins at the crowns and below the soil surface on the roots and stems of small plants and then above ground on the lower portion of the stem.



**Figure 2.** A plant infested with chinch bugs.

- Under high infestations, chinch bugs may be present in large enough numbers to completely cover the lower part of the plant (Figure 2).
- Damaged plants can display a variety of symptoms including yellowing, stunting, wilting, and necrotic lesions.
- Damage usually first appears along the field margin but can spread quickly into the interior.
- In earlier planted corn – which is larger and more resilient to damage at the time of migration – damage is usually confined to the field edge.
- In later-planted corn and sorghum that is smaller at the time of migration, plants may be completely killed.
- As few as 2-3 chinch bugs can kill a seedling sorghum plant, while 5-10 bugs per plant can kill larger plants.
- Plants suffering from drought or other types of stress will have less capacity to recover from feeding damage.
- Damage from second-generation bugs can occur in sorghum when a severe infestation is coupled with drought stress.



**Figure 3.** Second-generation chinch bugs on the leaves of corn plants.

## WEATHER EFFECTS

- Heavy infestations are most common in growing seasons with above-normal temperatures and below-normal rainfall.
- Heavy rainfall in May and June can significantly reduce survival of first-generation nymphs by burying them in mud and triggering fungal infections that can lead to heavy mortality.
- Extended periods of hot and dry weather can also kill off young nymphs.
- Large overwintering populations are favored by below-normal rainfall later in the season and mild winters, which increases survival in less-protected overwintering sites.

## MANAGEMENT CONSIDERATIONS

- Historically, cultural control methods, such as burning of overwintering sites and the construction of physical barriers to impede migration, were widely used to manage chinch bugs.



- Separating small grain fields and sorghum/corn fields with a non-host crop has also been recommended, although migrating nymphs can travel considerable distances to find a suitable host crop.
- An early planted strip of corn or sorghum along the field margin can be used as a trap crop, which can then be treated with an insecticide.
- Insecticide seed treatments are an important tool for management of chinch bugs – systemic neonicotinoid insecticides such as clothianidin and imidacloprid provide sorghum plants with about three weeks of protection, giving the plants a better chance of making it through the seedling stage when they are most susceptible to damage.
- Protection from seed treatments has its limits though – early planted sorghum may lose seed treatment efficacy before the bugs migrate in, and heavy enough infestations may still be able to overwhelm and kill treated plants.
- Timely applications of foliar insecticides can be used to rescue corn or sorghum fields that have been invaded by chinch bugs.
- Applications should be made as migrations begin, before large numbers of insects have entered the field.
- Insecticides can be applied as a border treatment or full field treatment if the infestation is widespread.
- Chinch bugs are difficult to control – it is important to use the full recommended rate of insecticide and a high carrier volume (20 to 40 gallons of water per acre).
- For plants up to 6 inches tall, consider banding the spray over the row.
- For taller plants, applications directed at the base of the plant provide the best control.
- A second application may be necessary if heavy migration extends for more than 10 days.
- **Always read and follow insecticide label recommendations.**



**Figure 4.** Close-up view of an adult chinch bug.

## REFERENCES

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- Wright, R.J. 2013. Chinch Bug Management. G806. University of Nebraska-Lincoln Extension.

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