

# GRASSHOPPERS IN SOYBEAN

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## Classification and Description

Grasshoppers are generalist plant feeders, belonging to the order Orthoptera. Although several species are commonly found feeding on soybean, most are short-horned grasshoppers (family Acrididae). They have short, thread-like antennae with enlarged hind legs that aid in jumping and enable the grasshoppers to quickly escape from predators and other threats. Grasshoppers have chewing mouthparts, and the adults have two pairs of wings that are folded over their “backs” when not flying (**Figure 1**). Adults of some species can reach up to 2 inches in length with female grasshoppers tending to be larger than males. The color patterns of grasshoppers vary considerably because there are multiple species observed in soybean, colors change as they molt from one life stage to another, and because their colors may change to match their environment.



Figure 1. Adult short-horned grasshopper and typical defoliation damage.

## Hosts, Life History and Distribution

Grasshoppers are widely distributed worldwide, with more than 10,000 known species. Many species have a wide host range and tend to feed on grasses and weeds before moving into cultivated crops, such as soybean, when alternate food sources become scarce or are mowed. The majority of grasshopper species overwinter as eggs in the soil of grassy ditch banks, pastures, fence rows and hay fields. Hatching occurs during late winter or spring, depending on the weather. Most grasshoppers will mate and live in the same area during their entire life. The maturation process for grasshoppers typically takes 40 to 60 days, and many species have two or more overlapping generations per year. Once females become adults, they mate and start laying eggs. A single female can lay 200 to 400 eggs in her lifetime. Clusters of grasshoppers from freshly hatched egg masses are often seen congregated on the leaves of soybean plants (**Figure 2**).



Figure 2. Freshly hatched grasshoppers and feeding damage on leaves.





*Freshly hatched grasshoppers and feeding damage on leaves.*

## Pest Status and Injury

Grasshoppers are an occasional pest of soybean; however, some fields in Tennessee require an insecticide application in most years. Grasshoppers feed primarily on foliage and are part of the defoliating pest complex in soybean, but feeding on flowers, pods and other plant parts is sometimes observed. Leaf feeding is characterized by irregular holes that extend in from the leaf margins or between the leaf veins. Plants are most susceptible to damage when they are small, from the time of emergence to V2. Thus, most serious infestations are seen on seedling soybean plants, especially in reduced tilled fields because tillage can destroy egg masses. Both immatures (nymphs) and adults may feed on the main stems of seedlings and reduce plant stands to the point where replanting is needed. However, serious damage is usually caused by large numbers of nymphs (**Figures 3 and 4**). Grasshopper infestation is often worse following a dry year.

## Sampling and Control

Grasshoppers tend to concentrate on field edges first before dispersing further into the field, and are easily caught with a sweep net. However, insecticide treatment is generally based on defoliation levels and the potential to cause stand loss. Treatment is suggested when defoliation exceeds 30 percent or unacceptable levels of stand loss is occurring prior to flowering. Treatment specifically for grasshoppers is rarely needed once blooming has begun. As part of a defoliator complex, treatment is sometimes needed between first bloom (R1) and full seed (R6) when 20 percent or more defoliation is observed. A beneficial cultural practice is to mow ditch banks and field edges before crop emergence to minimize the optimal habitat for grasshoppers before they relocate into cropping fields.

Please refer to [UT Insect Control Recommendations for Field Crops \(PB 1768\)](#) for suggested chemical controls.



*Figure 3. Small grasshopper nymph.*



*Figure 4. Larger grasshopper nymph.*

## SOURCES

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