Early-Season Bean Leaf Beetle in Soybean

KEY POINTS

- Although economic damage from early-season bean leaf beetles is rare, potential for yield losses exists in early-planted soybeans and in fields that are isolated from other soybean fields.
- Fields at risk should be monitored closely after planting.
- Control of early-season bean leaf beetles may be accomplished with use of seed treatments as well as foliar insecticides.

WHAT TO CONSIDER

The adult bean leaf beetle (BLB), Cerotoma trifurcata, overwinters in leaf litter on the edges of wooded areas near soybean fields and in soybean residue. Overwintering BLB are susceptible to low temperatures. Mortality rates increase with accumulating days of subfreezing temperatures and when snow cover (which provides insulation) is minimal or absent. Mild winters favor the survival of overwintering BLB. They become active in the spring when temperatures reach 50 °F. Adult BLB are strongly attracted to soybeans and will move into fields with newly emerging plants. The earliest planted soybean fields and those that are isolated from other soybean fields have the greatest risk of economic feeding injury. At-risk fields should be monitored closely after a mild winter given that the potential for survival of overwintering BLB is significant.

YIELD IMPACTS

Research has shown that early-season BLB feeding rarely results in economic damage due to the soybean’s ability to compensate for tissue loss. Potential for economic damage may occur when BLB feeding damages the growing point or cotyledons before the unifoliate leaves emerge. Damaging levels of BLB are most common in fields that are the first in the surrounding area to emerge or are isolated from other soybean fields.

Although feeding injury can be important, the transmission of bean pod mottle virus (BPMV) can have a significant impact on yield. BLB is a common vector of BPMV. Virus transmission can occur at any growth stage; however, early infection poses the greatest risk of potential yield loss due to reduced seed size and pod set. Soybean products differ in susceptibility to BPMV.

MANAGEMENT OPTIONS

For seedling stage soybeans, scouting should be accomplished by examining individual plants. Be careful not to disturb the plants since beetles will drop from the leaves and hide within soil cracks and debris. Seedling stage scouting requires a determination of the number of beetles per foot of row or per plant, depending on the threshold recommendations you are following. Also note the extent of defoliation when counting beetles. Scouting should be conducted in at least five different locations throughout the field.

As the plants grow larger, drop cloths or sweep nets are the preferred method for scouting.

Figure 1. Bean leaf beetles can vary in color (light yellow or tan is most common) and are about 1/4 inch long. They can have 2 or 4 black spots on their backs, and a black border on the outside of each wing cover; however, these markings may be absent. Note the characteristic black triangle behind the head on both beetles above.
Early-Season Bean Leaf Beetle in Soybean

**Drop Cloths:** Place a cloth of known length between the row. Bend the plants from one row over the cloth and shake them vigorously so beetles fall onto the cloth. Count the beetles on the cloth and divide by the total number of feet examined (the length of the cloth) to get the number of beetles per foot of row. Do this in five different locations throughout the field to get a representative sample.

**Sweep Nets:** Sweep net sampling recommendations usually call for sets of 10-20 sweeps at each of five different locations throughout the field. The average number of beetles per set of sweeps is determined by adding the number of beetles in the net at all five locations and dividing by 5.

Management thresholds vary by region, growth stage, and crop value. Management recommendations can be found in your local University Extension publications or can be obtained by contacting your Extension entomology specialist.

Soybean yield loss can be in the 3-7% range when BLB damage results in early loss of both cotyledons or defoliation above threshold levels (Figure 2). Insecticidal seed treatments help protect seedlings from early-season BLB feeding. If the beetles appear to be injuring or clipping the cotyledons and growing points, and an insecticide seed treatment was not used, then a foliar insecticide treatment may be warranted. Several foliar insecticides (pyrethroid, carbamate, organophosphate) are labeled for BLB management.

To prevent BPMV transmission, a two-pronged approach is suggested. The first step is to protect young soybean seedlings from overwintering BLB adults by using an insecticidal seed treatment. If seed treatments aren’t used, a foliar insecticide application should be applied soon after crop emergence when BLB are present. A second application should be made at the first sign of first generation BLB, generally in July.

For additional information on BLB or early season soybean management, please see the following resources:

- **Soybean Germination and Emergence**
- **Early Season Insects of Soybean**
- **Mid and Late Season Bean Leaf Beetle**

Sources


Web sources verified 02/01/18.

![ Figure 2. Bean leaf beetle feeding on young soybean plants. If plants are beyond the V1 growth stage, it is sometimes easier to evaluate BLB pressure by estimating the percent of defoliation present on each plant. The plants above are showing about 5-10% defoliation. The threshold on prebloom soybeans is 30-50% defoliation before treatment is justified. ](image-url)