Overview

The bean leaf beetle (*Cerotoma trifurcata*) is a common soybean pest that feeds on cotyledons, leaves and pods.

Early planted soybeans and especially the first fields to emerge in an area is where seedling injury due to feeding by overwintering beetles is most likely to occur. Feeding injury is recognized by small round or oval holes in the middle of young leaves or on the leaf edge. Feeding by the over-wintering population or the first-generation beetle does not usually cause yield loss.

However, a second population of beetles peaks during the pod-fill stages, and feeding by this population can cause extensive damage to pods, seed yield, and seed quality. Damaged
pods are also more susceptible to rotting and discoloration.

Populations of bean leaf beetles have been increasing in the North Central region — back-to-back mild winters may be favoring the survival of overwintering adults.

**Bean leaf beetles can transmit viruses**

In addition to the physical injury to the plant, bean leaf beetles are known to transmit the Bean pod mottle virus (BPMV) from plant to plant as it feeds. The increasing numbers of bean leaf beetles in the region is thought to be the cause of a higher incidence in BPMV observed in recent years.

**Life Cycle**

**Overwintering population**
Adult beetles overwinter under leaf debris adjacent or near soybean fields. Once they become active in the spring they will feed on wild legumes, alfalfa and clovers.

When soybeans emerge they leave these alternate hosts and concentrate on soybean. They feed on emerging seedlings and deposit eggs in the soil near the plants. These overwintering adults generate the first generation of bean leaf beetles.

**First and second generation**
In addition to the overwintering adults, two generations of bean leaf beetles occur in the North Central region. The first adult generation usually peaks in the late vegetative or the early reproductive soybean stages, whereas the second generation peaks during the pod-fill stage. In mid- and southern parts of the region, this is usually mid-July for the first generation and late-August or early September for the second generation.

The adults eventually leave soybean and feed in alfalfa and other legume hosts before seeking overwintering sites under crop residue and leaf debris in fence rows and wood lots.

**Scouting**

Entomologists in the midwest recommend including bean leaf beetle in the early season scouting schedule. Examining plants by hand is the easiest method for seedling soybeans. By midseason, either sweep nets or drop cloths are effective sampling tools. When disturbed, adult bean leaf beetles will drop to the ground or onto lower leaves. Remember to scout in several areas of a given field to obtain a reasonable assessment of bean leaf beetle density for the field.
A few high counts are offset when several areas of a field are not infested, lowering the average number of beetles per plant. There’s no need to treat an entire field and spend more money than necessary if the field average of bean leaf beetles is lower than economic thresholds.

**Distribution**

High numbers of beetles in recent years have been attributed to milder winters or adequate snow cover that insulated and protected overwintering adult populations.

The beetle is an occasional pest of snap beans, clover, dry edible beans, and several leguminous weeds

**Management**

**Soybean varieties**
Soybean varieties differ in their maturity rate and may be more or less susceptible to bean leaf beetle feeding.

An early-maturing variety may be susceptible to late first generation pod feeding while another may set pods after first generation activity has peaked. Similarly, a late-maturing variety may be more vulnerable to bean leaf beetle injury when the second generation peaks in the late summer or early fall.

**Early planting can impact beetle populations**
The relative proportion of soybeans planted early in an area may have a significant impact on the establishment and development of bean leaf beetle populations.

Fields planted earliest in an area are most at risk for high populations of the beetle. First-generation populations are limited in late-planted soybeans if the stand emerges after the overwintering adults have concluded egg-laying.

For guidance on scouting thresholds and treatment recommendations, see also

- [Bean Leaf Beetle](#) – Ohio State University
- [Bean Leaf Beetle](#) – University of Missouri
- [Bean Leaf Beetle](#) – Northern Plains IPM Guide

**Managing beetles for virus control**
A separate issue with bean leaf beetles is the physiological stress caused by transmission of the bean pod mottle virus (BPMV). Although bean leaf beetles transmit BPMV all season long, soybeans are most affected when plants are infected in the seedling stage.

See Revisiting an integrated approach to bean leaf beetle and bean pod mottle virus management

Resources

Bean Leaf Beetle
Ohio State University
https://ohioline.osu.edu/factsheet/ENT-23

Bean Leaf Beetle
Northern Plains IPM Guide, 2011
https://wiki.bugwood.org/NPIPM:Cerotoma_trifurcata

Bean Leaf Beetle in Wisconsin
University of Wisconsin
https://fyi.extension.wisc.edu/fieldcroppathology/soybean_pests_diseases/bean_leaf_beetle/

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Iowa State University, 2007

Bean Leaf Beetle
Soybean Insects Guide, Iowa State University, 2011
https://www.ent.iastate.edu/soybeaninsects/bean_leaf_beetle

Bean Leaf Beetle
Kansas State University, 2008

Bean Leaf Beetle
University of Missouri, 2000
https://extension2.missouri.edu/G7150

Bean Leaf Beetle
Ohio State University, 2014
https://ohioline.osu.edu/factsheet/ENT-23