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Another Harsh Winter for Bean Leaf Beetle

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Another Harsh Winter for Bean Leaf Beetle

Abstract
Bean leaf beetle adults (Photo 1) are susceptible to cold weather and most will die when air temperatures fall below 14°F (-10°C). However, they have adapted to winter by protecting themselves under plant debris and loose soil. Each spring, adult beetles emerge from overwintering habitat and migrate to available hosts, such as alfalfa, tick trefoil, and various clovers. As the season progresses, bean leaf beetles move to preferred hosts, like soybean. While initial adult activity can begin before soybean emergence, peak abundance often coincides with early-vegetative soybean.

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Bean leaf beetle adults (Photo 1) are susceptible to cold weather and most will die when air temperatures fall below 14°F (-10°C). However, they have adapted to winter by protecting themselves under plant debris and loose soil. Each spring, adult beetles emerge from overwintering habitat and migrate to available hosts, such as alfalfa, tick trefoil, and various clovers. As the season progresses, bean leaf beetles move to preferred hosts, like soybean. While initial adult activity can begin before soybean emergence, peak abundance often coincides with early-vegetative soybean.

An overwintering survival model developed by Lam and Pedigo from Iowa State University in 2000 is helpful for predicting winter mortality based on accumulated subfreezing temperatures. Predicted mortality rates in Iowa are variable for the 2018-2019 winter,
ranging from 73-99 percent (Figure 1). Northern Iowa experienced colder temperatures and most bean leaf beetle adults are not expected to survive (99 percent mortality expected).

![Map showing predicted overwintering mortality of bean leaf beetle](image)

Figure 1. Predicted overwintering mortality of bean leaf beetle based on accumulated subfreezing temperatures during the winter (1 October 2018 – 15 April 2019).

These mortality predictions have been tracked since 1989 with Marlin Rice. Last winter, the predicted mortality of bean leaf beetle in central Iowa was 87 percent, which is about ten percent higher than the 30-year average of 71 percent (Figure 2). It is important to remember insulating snow cover and crop residue can help protect bean leaf beetle from harsh air temperatures. Fluctuating temperatures can negatively influence spring populations.
Overwintering beetle populations are expected to be low this year; however, consider scouting soybean fields, especially in southern Iowa, if:

1. Soybean is planted near alfalfa fields or if the field has the first-emerging plants in the area. Overwintering adults are strongly attracted to soybean and will move into fields with emerging plants.
2. Fields are planted to food-grade soybean production or are seed fields where reductions in yield and seed quality can be significant.
3. Fields have a history of bean pod mottle virus.

Bean leaf beetles are easily disturbed and will drop from plants and seek shelter in soil cracks or under debris. Sampling early in the season requires you to be “sneaky” to estimate actual densities. Although overwintering beetles rarely cause economic damage, their presence may be an indicator of building first and second generations later in the season. More details information about bean leaf beetle and bean pod mottle virus are available.

Category: Crop Production  Insects and Mites

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Crop:
Soybean

Tags: beetle pest IPM scouting mortality Soybean

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