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Beetles, virus, and management in soybean

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Beetles, virus, and management in soybean

Abstract

Bean leaf beetles began emerging from overwintering sites during the last week of April in central Iowa. These beetles can be found in roadside ditches, field margins, and alfalfa fields where they are feeding and mating. As soon as soybean seedlings emerge, the beetles will fly to soybean fields to lay eggs. The significance of this activity is that the beetles have the potential of transmitting bean pod mottle virus to soybean seedlings.

Keywords

Entomology

Disciplines

Agricultural Science | Agriculture | Entomology | Plant Pathology

INTEGRATED CROP MANAGEMENT

Beetles, virus, and management in soybean

Bean leaf beetles began emerging from overwintering sites during the last week of April in central Iowa. These beetles can be found in roadside ditches, field margins, and alfalfa fields where they are feeding and mating. As soon as soybean seedlings emerge, the beetles will fly to soybean fields to lay eggs. The significance of this activity is that the beetles have the potential of transmitting bean pod mottle virus to soybean seedlings.

Rayda Krell, graduate student in entomology, collected bean leaf beetles last fall from 80 Iowa counties, and laboratory analysis so far indicates that beetles from 73 counties were infected with bean pod mottle virus before they overwintered. However, we do not know what percentage of beetles carry the living virus in their gut when they emerged. The virus may not overwinter very well inside the beetle. Studies conducted by Craig Grau, plant pathologist at University of Wisconsin, suggest that alfalfa may harbor bean pod mottle virus so it would be relatively easy for beetles to acquire the virus from alfalfa before moving to soybean.

The rise of bean leaf beetle populations and bean pod mottle virus problems during the past 2-3 years also strongly suggests that we may need to manage our early-season bean leaf beetle population much differently than we did in the 1990s. We are researching the bean leaf beetle-bean pod mottle virus problem but we have few solid answers regarding management at present. However, some soybean fields, especially very early emerging fields, may benefit from an early-season insecticide application during the VC-V2 stages to control bean leaf beetles, which would then help reduce viral infection.

Another method of reducing the problem is to not plant soybean early. Fewer beetles fly to fields that have delayed emergence in May. Fewer beetles also mean that there is less chance for bean pod mottle virus problems.

To justify an early-season insecticide application I would suggest that three criteria should be met before spraying:

1. bean leaf beetles must be present in the field,
2. plants should be in very early growth stages (VC-V2), and
3. bean pod mottle virus symptoms should be confirmed or strongly suspected (i.e., green stems at harvest) last fall.

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