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Bean leaf beetles can knock down soybean yields

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Bean leaf beetles can knock down soybean yields

Abstract

Bean leaf beetle populations have been on the increase for the past couple of weeks. Reports from western and central Iowa suggest that populations are large again this year, particularly in early-planted soybean fields. The beetles that are being seen now are part of the F1 generation; these beetles developed from eggs that were laid in the soybeans shortly after plants emerged. The next generation, or F2, is often the most damaging of the two generations, but either generation can cause damage if green pods are present in the field at the same time as the beetles are feeding. Large populations have reduced yields by 20-50 percent in past years so the importance of this insect should not be ignored.

Keywords

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INTEGRATED CROP MANAGEMENT

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[1]

The yellow phase of the bean leaf beetle is the most common color variety.



[2]

Some bean leaf beetles are red instead of yellow.



[3]

Some bean leaf beetles lack the "rectangular" spots on the wing covers.

Bean leaf beetles will feed on soybean leaves throughout the season, but leaf feeding seldom causes yield loss. Most damage (economic yield loss) occurs when beetles feed on the developing pods. This yield loss can occur in several ways. Pods may be clipped from the plants, or plant diseases may enter the pod from the feeding sites, causing seeds to appear shrunken, discolored, and moldy. This latter type of injury reduces seed quality.



[4] Bean leaf beetle injury to a soybean pod.

Beetles injure pods by feeding on the outside layer of the soybean pod, leaving a thin layer of tissue still covering the seed. They do not eat into the developing seed. Grasshoppers also feed on pods but they bite completely through the pod and destroy the seed.

Begin looking for bean leaf beetles during the R4 stage (full pod) of soybean development. Scouting is no longer necessary after pods reach the R7 stage (yellow pod). Scout fields by walking 100 feet in from the field edge. Each field, and each variety within a field, should be scouted separately because bean leaf beetles sometimes concentrate in one variety and avoid another variety.

In 30-inch row soybeans, place a 3-foot wide strip of cloth (stapled to two dowel rods) on the ground between the rows. Slide the cloth under the plants and try to keep plant disturbance to a minimum before the cloth is spread between the rows and you are ready to shake the plants. Bend the plants over the cloth, and shake them vigorously when the cloth is in place. Count the number of beetles on the cloth. Repeat this procedure four times for each 20 acres in the field. Determine the average number of beetles per foot of row and then consult the economic threshold table (Table 1).



[5] **Bean leaf beetles can be shaken onto a white cloth and counted.**

In narrow-row soybeans, a sweep net will be easier to use than a drop cloth. Take 20-25 sweeps in each 20 acres across the field. Determine the average number of beetles per sweep and consult the economic threshold table. For narrow-row soybeans (8-inch rows) and a plant population of three plants per foot of row, multiply the economic thresholds by 0.7 to determine an approximate threshold in narrow-row fields.



A sweep net can be used to sample for bean leaf beetles in drilled beans.

[6]

If the average number of bean leaf beetles equals or exceeds the economic threshold, an insecticide application is necessary to prevent economic yield loss (Table 2). The benefits (saved bushels of soybean) should exceed the costs (insecticide and application) and provide an economic return.

If the beetle population is less than the economic threshold, scout the field again 5 days later. More beetles could emerge from the soil, and the population could reach the economic threshold at that time. Stop scouting when

1. beetle counts start to decline,
2. soybean pods begin to turn yellow (R7 stage), or
3. the field is sprayed.

Table 1. Bean leaf beetle economic thresholds in reproductive-stage soybeans.*

Crop value (\$/bushel)	Treatment cost per acre (insecticide + application)
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	\$7	\$8	\$9	\$10	\$11	\$12	\$13	\$14	\$15
	beetles per foot of row								
\$5.00	5.5	6.3	7.1	7.9	8.7	9.5	10.3	11.0	11.8
\$6.00	4.6	5.2	5.9	6.5	7.2	7.8	8.5	9.2	9.9
\$7.00	3.9	4.4	5.0	5.6	6.1	6.7	7.3	7.8	8.4
\$8.00	3.5	4.0	4.5	5.0	5.5	6.0	6.5	7.0	7.5
	beetles per sweep								
\$5.00	3.5	4.0	4.5	5.0	6.5	7.2	7.7	8.3	8.7
\$6.00	2.9	3.3	3.7	4.1	5.4	6.0	6.4	6.9	7.3
\$7.00	2.4	2.8	3.1	3.5	3.8	4.2	4.5	4.9	5.2
\$8.00	2.2	2.5	2.8	3.2	4.1	4.5	4.8	5.2	5.5

*Economic thresholds are based on a row spacing of 30 inches and a plant population of eight plants per foot of row. For narrow-row soybeans (8-inch rows) and a plant population of three plants per foot of row, multiply the above economic thresholds by 0.7.

Table 2. Common chemicals labeled for bean leaf beetle in soybean.

Insecticide	Amount per acre	Harvest interval (days)
Ambush 2EC*	3.2-6.4 ounces	60
Asana XL*	4.8-9.6 ounces	21
Lorsban 4E	1-2 pints	28
PennCap-M*	2-3 pints	20
Pounce 3.2EC*	2-4 ounces	60
Sevin XLR Plus	1-2 pints	0
Warrior T*	1.92-3.2 ounces	45

*Restricted use insecticide.

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Links:

- [1] <http://www.ent.iastate.edu/imagegal/coleoptera/beanlb/0212.5yelblb.html>
- [2] <http://www.ipm.iastate.edu/ipm/icm//iblbred.html>
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