

# IN THE FIELD

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## Bean Leaf Beetle Identification

- Eggs – lemon shaped, orange in color, may be found in small clusters around the base of soybean plants.
- Larvae – grub-shaped, whitish, dark brown at both ends, segmented and have 6 very small legs near the head. They are approximately 3/8 inch long when fully grown.
- Pupae – white and soft bodied. Pupation takes place in an earthen cell.
- Adults – reddish to yellow in color, about 1/4 inch long, usually with 4 black spots on the back surrounded by a black band near the outer margin of the wing covers. They also have a black triangle in the anterior margin of the wing. Adults drop to the ground when disturbed.

**Bean Leaf Beetle Adult** - The bean leaf beetle usually has four rectangular spots in the center of the wing covers and a black triangle near the head.

### Life Cycle

- Overwinter as adults in various habitats around soybean fields but seem to prefer leaf and plant litter in wooded areas.
- Beetles begin emerging from overwintering sites in early April at which time they mate and disperse to weedy and brushy areas, especially along roads and ditches. They may move into spring legumes such as alfalfa and sweet clover.
- Beetles move into soybeans as soon as plants have emerged.
- These colonizers feed on developing leaves and cotyledons and begin laying eggs.
- Eggs are laid in the upper two inches of soil, usually within three inches of the plant stem. A female normally lives about 40 days and lays 125 to 250 eggs.
- Eggs hatch in 4-14 days, depending on soil temperature.
- Larvae live in the soil where they feed on plant roots and have three instars.
- Larvae develop to pupae in about 23 days. Warmer soil temperatures can shorten larval development time.
- Pupation is completed in about a week and adults emerge from the soil.
- Total developmental time from egg to adult normally ranges from 25 to 40 days.
- There are two generations per year in Nebraska.



**Host Range** – Soybean; Peas; Snap beans; Dry beans; Present in alfalfa and sweet clover in the early spring before soybean emerges, but damage due to feeding has not been reported.

### Injury & Damage

- Adults feed on the leaves causing defoliation. As defoliation increases, yield decreases.
- Adults also feed on the pods causing scarring. Pod damage can decrease yield and reduce seed quality. Damaged pods are also predisposed to secondary infection by bacteria and fungi which may cause rotting and discoloration.
- Bean leaf beetles are known to transmit bean pod mottle virus, cowpea mosaic virus, and southern bean mosaic virus.
- Larvae feed on the roots and root nodules. Although this feeding can reduce nitrogen fixation, its economic importance remains unclear.

## Monitoring

- Beetle activity varies during the day but the best sampling times are around mid-morning or in the afternoon.

## Direct Observation

- During the seedling stage, direct observation is the preferred sampling technique. A seedling soybean has three or fewer unfolded trifoliolate leaves.
- To use this method, randomly select at least five sampling sites from across the entire field.
- At each sampling site, slowly walk down 15 to 20 feet of row and carefully count all beetles.
- Do not disturb the plants, but set close enough so you can see the underside of the leaves. Calculate the average number of beetles per foot of row.

## Drop Cloth Technique

- Used when soybean plants are too large for direct observation.
  - Cannot be used in drilled or broadcast seeded soybean fields.
  - Equipment consists of an off-white cloth measuring 36 x 42 inches with strips of wood, approximately 1/2 x 1 inch wide, stapled to each long side of the cloth.
1. Randomly select at least five sampling sites from across the entire field.
  2. At each site, carefully slide the rolled up drop cloth beneath the canopy and unroll the cloth from one row over to the next row without disturbing the foliage.
  3. Next, vigorously shake the plants from both rows over the drop cloth using both hands and forearms. Count the beetles as they hit the cloth. In this way, two 3-row-feet sections (6 feet total) are sampled.
  4. Calculate the number of beetles per row-foot.
  5. If you cannot identify the insect, collect several specimens for later identification.



## Extension Releases Grain Marketing Plan App

A new mobile application from Nebraska Extension aims to help farmers manage their operations in a rapidly changing price environment. The free Grain Marketing Plan app is available on iPhone and iPad devices for users marketing corn, soybeans or winter wheat.

The app can help farmers develop customizable grain marketing plans pre- or post-harvest. It has a built-in reminder system so that once a farmer has entered decisions into their plan, he or she will receive alerts once a decision trigger has been hit. The decision triggers can be set up based on a target time or futures price. It is one of the first apps of its kind to allow users to not only view futures price information, but interact with them.

"The idea is that the mobile app will help producers make their grain marketing decisions, even while they're in the field," said Associate Extension Educator Jessica Groskopf.

While grain marketing plans are critical to an operation's success, the majority of Nebraska farmers have not developed a plan. Nebraska

Extension hopes that this new user-friendly app can help producers decipher fact versus feeling when making grain marketing decisions.

"The Grain Marketing Plan app allows farmers to dictate their future, on their terms," said Cory Walters, assistant professor in the Department of Agricultural Economics. "A simple reminder for farmers of the decision triggers they committed to in the spring can make a huge difference in the overall success of a farming operation."

According to Walters, the app is beneficial in the current environment because it is important for farmers to actively market their grain during times of lower commodity prices. With rapidly changing prices, there are limited opportunities for farmers to price grain above break-even prices. This app can alert farmers when futures prices have hit their estimated break-even point.

For more information on the app, visit <http://farm.unl.edu/grain-marketing-plan>.