Agronomic Spotlight

Early Season Insects of Soybean

- Early season insects of soybean feed on seeds and seedlings causing plant injury, stunting, delayed emergence, or stand loss.
- Scouting is necessary to determine the types of insects present and their population densities in order to make informed management decisions.
- Sampling methods include scouting, soil sampling, and using baited traps.

Be on the Lookout

Early season soybean insects should be on a grower's mind when examining seedling emergence and soybean stands this spring. Early season insects of soybean feed on seeds and seedlings causing plant injury, stunting, delayed emergence, or stand loss.

Insects to Look For

Bean leaf beetle (BLB). Adult BLB (Figure 1) are about 1/4 inch in length. The most distinguishing characteristic is the presence of a small black triangle located at the base of the forewings. Some beetles will have four black markings on the wings. Typically, the beetles are dark yellow in color but can range in hues of yellow, orange, and red. Early season injury to soybean is caused by the overwintered adults feeding on cotyledons, leaves, and stems. In addition, this pest can transmit bean pod mottle virus.

Figure 1. Bean leaf beetle on soybean leaf.

Wireworm. Wireworm (Figure 2) can be a problem in soybean, especially in fields previously planted with sod or small grains. Wireworms are hard-bodied, slender, brownish larvae that grow to about 1 inch long. They feed on seeds and seedlings.

Figure 2. Wireworm in soil.

Seedcorn maggot. These maggots are yellowish-white, about 1/4 inch long, and lack a defined head and legs (Figure 3). Seedcorn maggots feed on newly planted soybean seeds and can reduce stands.

Figure 3. Seedcorn maggot.
Whitney Cranshaw, Colorado State University, Bugwood.org.

White grub. True white grubs and masked chafer grubs can damage soybean seedlings, especially when the soybean crop follows sod or another cover crop. White grubs range in size from 1/4 to over 1 inch long and have white bodies with tan to brown heads (Figure 4). White grub species can be distinguished from one another by the pattern of rasters (bristle-like hairs) on the tip of the abdomen. White grubs feed on plant roots.

Figure 4. White grubs in soil.

Cutworm and armyworm. These caterpillars are generally 1 to 2 inches long. Cutworms are gray, brown, or black in color, and marked with dark spots or lines (Figure 5). Armyworms may vary from green to almost black, often with bright stripes down the body. These worms feed on leaves and stems, often severing the emerging seedling and cotyledons.

Figure 5. Black cutworm.

Soybean aphid (SBA). Soybean aphids are very small (less than 1/16th inch long), soft-bodied, pear-shaped insects (Figure 6). They vary in color from pale yellow to light green with black cornicles on the back of the abdomen. Early season aphid feeding can lead to stunted plants with fewer nodes, which can result in fewer pods.

Figure 6. Soybean aphids on the underside of a trifoliate leaf.

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Sampling Methods and Insect Management

Table 1. Treatment recommendations and action thresholds for early season soybean insects.

Early season soybean insect	Treatment options and action thresholds
Bean leaf beetle	Preventative treatment (seed treatments). Consider insecticides if: 5 or more beetles per plant or 1 damaged plant per foot of row;[1] or 30% stand loss or 30% defoliation.[5] Insecticides targeted at the arrival of first generation beetles can be used to minimize the transmission of bean pod mottle virus.[6]
Wireworm	Use direct soil sampling or bait stations in suspected fields. One live wireworm per bait station or cubic foot of soil is enough to cause potential problems. Preventative treatment (seed treatments labeled for wireworm) or replant with another crop.[3]
White grub	Use direct soil sampling method in suspected fields. Two or more white grubs per cubic foot are enough to cause potential problems. Preventative treatment (seed treatments labeled for white grub) or replant.[3]
Seedcorn maggot	Preventative treatment (seed treatments labeled for seedcorn maggot) or replanting.[6]
Soybean aphid	Preventative treatment (seed treatments). Thresholds have not yet been established for infestations occurring before the late vegetative growth stage but insecticides may be needed if 80% of the plants are infested with > 250 aphids per plant.[2,4]
Cutworm and armyworm	Infestations are unpredictable and infrequent. Insecticides may be needed when larvae are < 3/4 inch long and > 20% of plants are damaged or missing.[6]

Bean leaf beetle scouting. Scouting for BLB should begin as soon as cotyledons have emerged and continued on a weekly basis. Count the number of adult insects on the plants and look for percent damage in 5 meter diameter areas in several random locations throughout the field.

Direct soil sampling. To determine the presence of white grubs and wireworms, examine a 1 foot wide by 2 feet long by 6-inch deep volume of soil (1 cubic foot). Take 1 soil sample in 5 randomly selected areas of the field a few days before planting.

Wireworm bait stations. Bury approximately 1/2 cup each untreated wheat and corn seeds 6 inches deep in the soil. To increase soil temperature and facilitate germination, cover the trap with a piece of black plastic covered by a larger piece of clear plastic. Traps should be installed 2 to 3 weeks prior to planting and placed uniformly throughout the field.

Cutworm and armyworm scouting. Beginning with seedling emergence, observe 20 plants in 5 different areas throughout the field for evidence of leaf feeding or cutting and measure the size of the worms. To find larvae during the day, dig 2 to 3 inches into the soil.

Early season soybean aphid scouting. Use a magnifying glass to inspect the undersides of the top most trifoliate leaves where early season aphids are most likely to be found. Check 30 plants in 10 to 20 locations throughout the field on a weekly basis.

Preventative treatments, like seed treatments, may be available to help provide above ground protection from early season BLB and SBA for up to 30 days after planting. After emergence, scouting can help determine if action thresholds are met and insecticide application is warranted. However, treatment action thresholds (Table 1) can vary by state, pest, and stage of crop development. Consult with an Extension entomologist and/or agronomist for local recommendations.

Sources

[1] Boyd, M. L. and Bailey, W.C. 2000. Soybean pest management: Bean leaf beetle. G7150. University of Missouri Extension. http://extension.missouri.edu/.

[2] DiFonzo, C. 2009. Heavy soybean aphid infestations on early-season soybeans. Michigan State University. http://www.msuent.com/.

[3] Field Crops IPM. 2009. Purdue University. http://extension.entm.purdue.edu/.

[4] MacRae, I., et al. 2005. Early season scouting for soybean aphid. University of Minnesota Extension.

[5] Scout info. University of Kentucky. Kentucky IPM Pest Information Pages. https://www.uky.edu/.

[6] Soybean insects guide. 2011. Iowa State University. https://www.ent.iastate.edu/.

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For additional agronomic information, please contact your local seed representative. **Individual results may vary**, and performance may vary from location to location and from year to year. This result may not be an indicator of results you may obtain as local growing, soil and weather conditions may vary. Growers should evaluate data from multiple locations and years whenever possible.

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