Slugs Like the Wet Weather

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Abstract
Recently I have heard reports of slug damage to corn, soybean and sunflower. This particularly wet time in Iowa may be conducive to slugs. Although slugs aren't insects (legs or wings are absent and lack a segmented body), they often get lumped in with the bugs. Slugs have a head with a mouth, sensory tentacles and simple eyes. A simple foot produces mucus which aids in water conservation and movement. As slugs move, they leave a trail of mucus behind, sometimes referred to as a slime trail. Because they lack a hardened shell, slugs are able to move through small spaces and soil crevices. There are several slug species in North America, but the most common slug in Iowa crops is probably the gray field slug, Deroceras reticulatum.

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Slugs Like the Wet Weather

By Erin Hodgson, Department of Entomology

Recently I have heard reports of slug damage to corn, soybean and sunflower. This particularly wet time in Iowa may be conducive to slugs. Although slugs aren't insects (legs or wings are absent and lack a segmented body), they often get lumped in with the bugs. Slugs have a head with a mouth, sensory tentacles and simple eyes. A simple foot produces mucus which aids in water conservation and movement. As slugs move, they leave a trail of mucus behind, sometimes referred to as a slime trail. Because they lack a hardened shell, slugs are able to move through small spaces and soil crevices. There are several slug species in North America, but the most common slug in Iowa crops is probably the gray field slug, Deroceras reticulatum (Fig. 1).

Figure 1. The mature gray field slug is 1 to 2 inches in length and pale cream to gray in color with mottled spots. Photo by Bruce Marlin, Wikipedia.

Life Cycle. Slugs usually have one generation per year and overwinter in the egg stage. The life cycle can extend to 15 months, there are often overlapping generations. Peak feeding activity occurs in the late spring and early summer. Slugs will become inactive during extreme cold and hot temperatures and can resume feeding after moderate conditions return (63-68 degrees F; more than 75 percent soil saturation). Slugs are hermaphroditic, (i.e., each slug is male and female), but mating pairs are needed to produce offspring.

Damage. Slugs are nocturnal feeders and their damage can go unnoticed. Slugs can attack seeds or seedlings and reduce stand, or they can defoliate established stands. Unlike insects with chewing mouthparts, slugs have a tooth-covered tongue, called a radula. The radula is used like a rasp to scrape food surfaces. If the slug is feeding on seeds, they will hollow out the center similar to wireworms. Field damage to germinating seeds and developing seedlings can be devastating. Brian Lang, extension field agronomist in northeast Iowa, has noticed slug feeding in emerging soybean fields (Fig. 2).
Slugs feeding on older plants will cause streaking or holes on the leaves. Slugs can be particularly devastating in no-till fields with moist surface residue; conventional or reduced tillage fields rarely have slug problems. Environmental factors that favor slug outbreaks include the following:

1. No-tillage field crop production practices.
2. Development of dense weed cover or the addition of organic matter such as manure.
3. Mild winters may increase overwintering numbers, especially adult slugs.
4. Prolonged periods of favorable temperatures combined with evenly distributed rainfall.
5. Heavy and course soils, high pH, and excessive fertilization with nitrogen.
6. Cool growing conditions that delay crop development, extending the period of crop susceptibility.

**Scouting and Management.** No-till corn and soybean fields should be evaluated in May and June for slug feeding. Because slugs feed at night, it can be difficult to estimate the density. Slime trails are often a first indicator of slug infestations. Instead, estimate the percent defoliation, knowing that vegetative corn and soybean can withstand 30 to 40 percent loss of older leaves. With the growing point intact, crops can outgrow slug feeding.

Planting date can be an effective cultural control tactic for slugs. Planting before eggs hatch will give plants a chance to establish and tolerate any feeding. Planting late may minimize slug feeding because of quicker germination and warmer/dryer soil conditions. If stand loss is significant, replanting sections or whole fields may be an option if the planting date is not too late.

Chemical control of slugs is difficult because of their biology and ability to “slime” off pesticides. The most effective products are caustic to slugs, like salt solutions or liquid fertilizers. Unfortunately, the concentrations needed to kill slugs are generally phytotoxic to the crops as well. Commercially formulated metaldehyde baits can be applied at 3.25-4 percent rates. (e.g., Deadline M-Ps). Slug baits are expensive, typically in the range of $10 to $15 per acre.

When applying baits for slug control, it is very important that the application be made when the slugs are at peak activity above the soil surface. Thus, bait application should only be applied during periods of ideal temperatures and wet conditions favorable to aboveground slug activity. Slug baits do not provide complete knockdown, but suppress populations until the plant can outgrow the damage (Fig. 3). In strictly no-till systems, growers must be able to tolerate slug feeding. A long term solution for persistent slug infestations should include occasional use of tillage and residue removal.
Figure 3. Slug baits will only suppress populations. Photo by Joseph Berger, www.ipmimages.org.

Portions of this article were based on The Ohio State University fact sheet (link to: http://ohioline.osu.edu/ent-fact/pdf/0020.pdf).

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