Southern Corn Rootworm

[Diabrotica undecimpunctata howardi Barber]

The southern corn rootworm (SCRW) is one of the most troublesome insects for peanut producers. While pests like caterpillars, thrips, and spider mites can cause severe damage that is often quite obvious above the ground, rootworms feed below the soil surface. SCRW larvae are light colored with soft bodies, a dark head, and a small dark spot at the rear. Adults are small greenish-yellow beetles with 12 black spots.

Southern corn rootworms, cutworms, wireworms and the lesser cornstalk borer feed on peanut pods, especially in July and August. The damage caused by each one is slightly different, so the best way to identify a pod-feeding pest is to find the larvae, which is often difficult to do. Holes made by rootworms are always very small. SCRW larvae usually bore a small hole on one end of the pod and neatly eat the nuts. Cutworm larvae are large and usually bore a large hole in the middle of the pod and remove all the nuts. Wireworms bore two or more holes in the pod and bore holes in the nuts. Lesser cornstalk borers feed along the outside of the pod and then bore a hole and feed on the nuts. Their feeding is messier than that of southern corn rootworm, and they construct a sand cocoon on the pod at the entry hole.

SCRW prefer soils high in organic matter (over 1 percent) and have higher survival rates when soil is moist. Wet weather in July increases egg survival and the likelihood of problems. Early-planted fields are at less risk from damage. Beginning in late July and continuing through August, beetles lay eggs in the peanut field. If the soil is hot and dry, many eggs will not hatch. Most of the eggs are laid in the soil near the base of the plant, where the soil stays wetter than in the row middles. Adequate rainfall in
late July and early August can result in rootworm infestation. Rootworms often damage irrigated fields. Heavier soils also are more likely to have rootworm problems. The heavier the soil, the better its water-holding ability, so this soil is more likely to have the moisture rootworms need for survival. However, this does not mean that sandy soils can't have rootworm problems. If the soil moisture is adequate, rootworms can occur in almost any field.

Management Decisions

Not every field needs treatment, and control decisions should be based on scouting, soil type, planting date, and field history. The Risk Index developed for SCRW may be helpful in making control choices. The new Peanut Risk Management Decision Aid can help you evaluate fields for risk due to SCRW and other peanut pests. More information about scouting for SCRW is contained in the Integrated Pest Management Peanut Scouting Manual.

The standard management approach for rootworms is an at-pegging granular insecticide application in a band over the row. Researchers have developed a southern corn rootworm advisory, which relies on soil type for helping make a good decision about treatment. Knowing soil type is also useful. Heavier soils are more of a risk for reasons already discussed. Any soils referred to as “stiff land” probably should be treated. Fields under irrigation run a greater risk from rootworms because higher soil moisture favors egg laying, egg hatch, and rootworm survival.

Monitoring the soil moisture doesn't offer much help for decision making. The critical time for adequate soil moisture to ensure rootworm survival is early August. As discussed in the next section, treatments need to be applied before the grower knows if soil moisture is going to be adequate. During 2006, we received plenty of rainfall and, as a result, many higher risk fields had rootworm problems. Even if an at-pegging preventive
treatment is applied and the conditions that follow do not encourage a rootworm outbreak, some benefits are still derived from the application. These insecticides protect the crop from leafhoppers, offer some white mold suppression, and give some protection should any cornstalk borers and cutworms be present. Remember, however, that this is not a blanket recommendation to treat every acre of peanuts with a rootworm insecticide. Treat those fields that are high risk or those in which problems have occurred in the past. The use of rootworm insecticides can increase the likelihood of spider mite outbreaks, which is another good reason to avoid the unnecessary use of such products.

**Damaged pods**  
**SCRW larvae**

**Treatment and Application Options**

Rootworm treatments are usually applied after the Fourth of July with ground equipment using properly calibrated hopper boxes to place the insecticide in a 16- to 18-inch band over the row. This provides an important “zone of protection” around the developing pods. Check the height of the bander over the row, and make sure that the granules are striking the top of the foliage in at least an 8- to 10-inch band. Granules falling down through the plant should be distributed in a 16- to 18-inch band. Research has shown that light incorporation of the insecticide improves its performance. However, this is often difficult as the row middles may be closed when the materials are applied.
Insecticides can be applied any time from mid June to the first of August. Treatments applied after August 5 may not prevent some of the early hatching larvae from feeding on pods. Once the larvae hatch and begin feeding, an insecticide treatment is not effective. If growers wait until the end of the first week in August to determine if there was adequate soil moisture to allow a rootworm infestation, it may be too late for the treatment to achieve sufficient control. NC State studies have shown that treatments after the first week of August do very little to protect pods from rootworm damage.

Two modified approaches to rootworm control can be used with favorable results, but growers must understand the risks involved. With these two options, growers can save a few dollars or gain additional benefits from rootworm treatment, but they may also increase their risk of crop loss.

**Early Application of Rootworm Insecticides**

Many growers have considered the early application of their rootworm insecticides. This early application would be at-flowering or approximately mid-June rather than at-pegging (mid-July). There are several possible
advantages to this early application. First, the growers begin gaining the benefits of leafhopper control much earlier. In addition, some products offer white mold suppression. Earlier application would also mean the middles are more open and fewer vines would be run over with the standard 4-row equipment used for granular application. One final benefit would be that some products might offer some lesser cornstalk borer protection should conditions be extremely dry in late June and July.

Application after August 1. The option for rootworm control other than the standard pegging-time treatment is a delayed treatment. This delayed treatment is often not intentional, but rather the result of wet weather in July that delayed the ground application. If the application of rootworm insecticides is delayed until after August 1, then there are risks involved. First, the middles will be more closed, so the use of ground equipment will crush more vines. Most importantly, the insecticide must be applied by August 5. Any delay beyond this date may allow rootworms to begin feeding on pods and do significant damage. Although you wouldn’t plan this delay, it can often happen if we get substantial rainfall in the first week in August and the soil is too wet to run ground equipment across the field. As a general rule, it is not recommended to treat for rootworms after August 1. This is because there are many times when it rains, and the treatment is delayed beyond the date for which it will still provide an economic benefit.

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