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Northern corn rootworms in soybeans: What does it mean?

Abstract

Adult northern corn rootworms have been extremely abundant in soybeans this August (Figure 1). Beetle populations in soybeans at the extension field lab in Boone County averaged 45 per 20 sweeps; however, Brad Buchanan, crop consultant in Cedar Rapids, reports 50–150 per 20 sweeps in some eastern Iowa fields. Their abundance has prompted many questions regarding what they are doing in soybeans and if they will present a threat to rotated corn next year. Here are several of the questions we have encountered, and our responses to those questions.

Disciplines

Agriculture | Entomology



Insects and Mites

Northern corn rootworms in soybeans: What does it mean?

by Marlin E. Rice and Jon J. Tollefson, Department of Entomology

Adult northern corn rootworms have been extremely abundant in soybeans this August (Figure 1). Beetle populations in soybeans at the extension field lab in Boone County averaged 45 per 20 sweeps; however, Brad Buchanan, crop consultant in Cedar Rapids, reports 50–150 per 20 sweeps in some eastern Iowa fields. Their abundance has prompted many questions regarding what they are doing in soybeans and if they will present a threat to rotated corn next year. Here are several of the questions we have encountered, and our responses to those questions.

Do northern corn rootworms feed on soybeans?

The larvae do not feed on soybean roots—they are restricted solely to corn and several species of grasses. The adults, however, will feed on soybean leaves but apparently they do not like soybean leaves. Adult beetles were collected from soybeans in Boone County the first week of August and placed on soybean leaves in Petri dishes. After 96 hours, 20 percent of the beetles had died without feeding on the leaves, and those that did feed ate very little. The most feeding injury caused by these adults in this experiment was very minor, not amounting to more than ½ square inch (Figure 2).

Do northern corn rootworms lay eggs in soybeans?

We have no evidence that they are laying eggs in soybeans, so as far as we know, the answer is still no. But the abundance of adults in soybeans certainly makes us pause and wonder if the insect might be changing its behavior.



Figure 2. Injury to soybean leaflet from adult northern corn rootworm. (Marlin E. Rice)



Figure 1. Adult northern corn rootworms feeding on corn silks. (Marlin E. Rice)

Could northern corn rootworms change their behavior and lay eggs in soybeans?

Sure, corn rootworms have surprised us with several behavioral changes that make us think that if northerns laid eggs in soybeans it would not be a total surprise. During the last 25 years, we have witnessed the development and increase in extended diapause in northern corn rootworms, and now the spread of this behavior across the entire state. Also, the western corn rootworm has changed its behavior and some populations in Illinois, Indiana, and extreme eastern Iowa now lay eggs in soybeans.

Should these adult northern corn rootworms in soybeans be killed with an insecticide? No.

Again, we have no evidence that they are laying eggs in soybeans and their leaf injury is insignificant.

Should an insecticide be used in first-year corn if northern corn rootworms were abundant in the soybeans this year?

An insecticide should be used only if there is a confirmed extended diapause problem (i.e., lodging from rootworm larvae) in the neighboring corn fields. We would not recommend insecticide use only based on the presence of northern corn rootworms in soybeans.

What is Iowa State University doing to address this northern corn rootworm “situation” in soybeans?

We may sample soil from some of these high population soybean fields this winter and look for corn rootworm eggs, but this procedure is labor intensive, costly, and rootworm eggs can be very easy to miss unless a large number of samples are collected. We would be interested in knowing where continuous soybeans (2 or 3 years) will be planted to corn in 2006. In these fields, we could place emergence cages to trap adults and confirm, or deny, that northern corn rootworms were laying eggs in the soybeans. Then, we would have an answer to the question that has many of us bugged.

Marlin E. Rice is a professor of entomology with extension and research responsibilities in field and forage crops.

Jon J. Tollefson is a professor of entomology and chair of the Department of Entomology, Iowa State University.



Soil Fertility

BEWARE! Nitrate potential in drought-stricken corn crop

by **Daryl R. Strohbehn, Department of Animal Science, and Byron Leu, Iowa State University Extension**

During drought years the potential exists for the corn plant to have high levels of nitrates. This is largely due to high soil nitrogen levels that are readily available, but the plant is unable to utilize it because of moisture shortages. As a result the nitrates accumulate in the plant and can occur at toxic levels. Excessive levels in corn when harvested as green chop or made into corn silage and then fed can cause high blood levels of methemoglobin to occur. Methemoglobin cannot carry oxygen to animal tissues and can result in a number of symptoms, and in severe cases, death.



(Natural Resources Conservation Service)

Field livestock specialists in Illinois and Iowa have been doing “Field Screening Tests” consisting of a mixture of diphenylamine and concentrated sulfuric acid. This mixture is placed on the split stem of the corn plant and with a resulting color change can assist in identifying fields with nitrate problems. Limited tests done in southeast Iowa by Byron Leu, livestock field specialist, have shown about 50 percent of the plants to have nitrates present. This test does not indicate the level of nitrates, but rather whether it is present or not. In his field testing procedure, several of the plants had nitrates occurring up to 3 feet of stalk height, thus moving the cutting height up will not always solve the problem. Of greatest concern is the direct feeding of green chop corn that has nitrates present. Normally, if the corn plant is chopped and then ensiled, nitrate levels will drop by 50 percent or more.

Further information can be found on the drought Web page from Iowa State University Extension at www.extension.iastate.edu/ag/droughtinfo.html.

Daryl R. Strohbehn is an extension beef specialist with the Iowa Beef Center. Byron Leu is an extension field specialist.