

Many tools are now available for growers to manage corn rootworm – “the billion dollar pest.” As a result, it has become even more difficult to evaluate and determine which management options will provide the best control and be the most economically viable. Syngenta Agronomy Research has conducted multiple studies to evaluate rootworm control product performance across many geographies and years to help guide your management decisions.

## Why manage corn rootworm?

Corn rootworm larvae feeding on roots can cause:

- Reduced yield
- Root lodging
- Slowed harvest time
- Reduced stalk quality
- Increased volunteer corn
- Poor utilization of soil fertility
- Any combination of above



Root Lodging



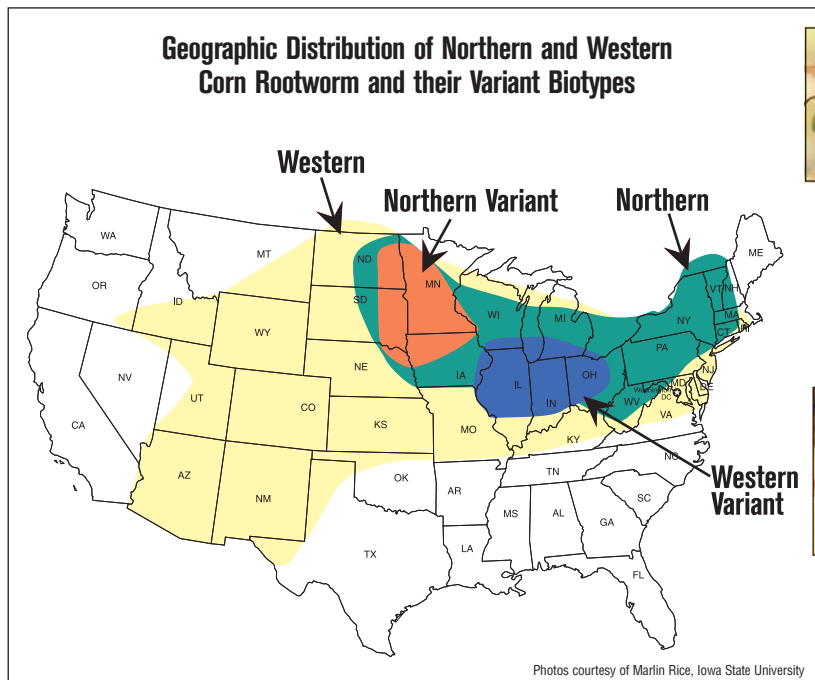
Feeding Damage



Close-up Root Damage

## Where is corn rootworm a problem?

Corn rootworm management has long been a concern to some degree in most corn growing regions, but especially in areas (or fields) not annually rotated between alternate crops such as soybeans. For this reason, managing corn rootworm has become a standard practice when growing continuous corn. However, over the last decade rootworms have evolved to cropping rotations and now create management concerns on rotated acres in certain geographies.



### Northern Variant (extended diapause)

Traditional Northern Corn Rootworm eggs were laid in August and hatch the following spring; however, this new biotype now has the ability for eggs to lay dormant in soils for multiple years, allowing egg hatch to occur when rotations return to corn.



### Western Variant

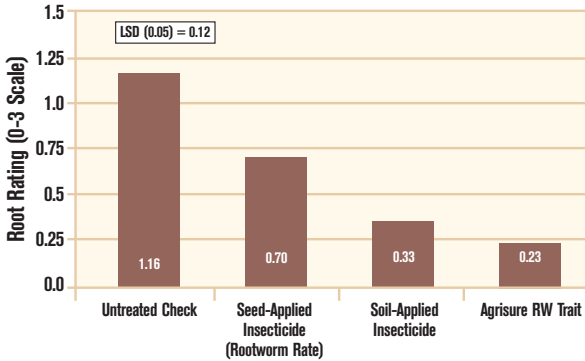
Western corn rootworm has traditionally laid eggs only in corn fields. Recently, this species has learned to migrate into neighboring soybean fields to lay their eggs. This change allows the rootworm larvae to hatch and feed on corn roots.

In areas where these variants have evolved, crop rotation is now useless for managing rootworm. Management strategies are commonly necessary in most of these areas when growing corn, although there are still many fields in these geographic areas in which rotation may be effective. This makes management even more difficult in these areas.

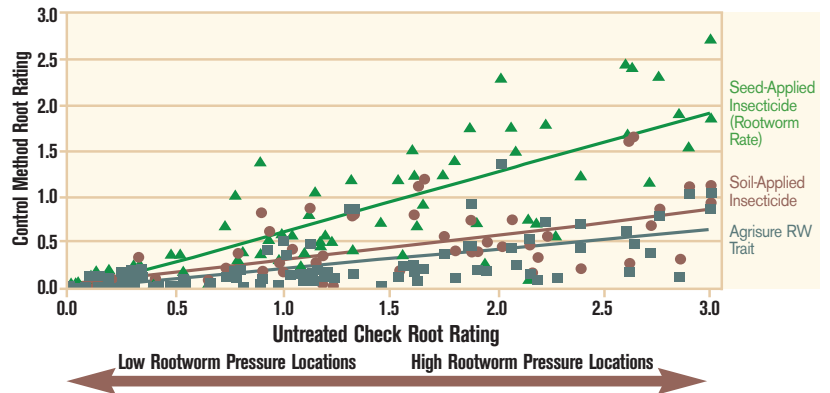
# Protecting Your Investment

Syngenta Agronomy Research has conducted studies over many years and environments to evaluate the consistency and effectiveness of available rootworm management options. The following graphs illustrate the performance and consistency of some of these products.

**Influence of Corn Rootworm Control Method on Root Rating**  
Averaged Over 85 Locations, 2004-2008



**Relationship Between Corn Rootworm Control Method Root Rating and Untreated Check Root Rating**  
85 Locations, 2004-2008



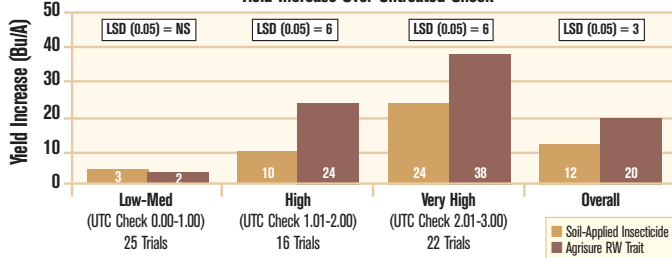
## Summary of Root Protection Trials

- The 85 locations tested represent a wide range of rootworm pressure (untreated check root ratings ranged from 0-3 on ISU rating scale – refer to rating scale at right).
- Seed-applied insecticides at rootworm rate performed best under low rootworm pressure situations.
- Standard soil-applied insecticides improved rootworm control over seed-applied insecticides (rootworm rate) when rootworm pressure was high.
- Hybrids with the Agrisure® RW trait provided the highest and most consistent level of root protection, especially under high rootworm populations.
  - Root ratings of Agrisure RW hybrids were less than 0.75 (ISU 0-3 scale) in 92% of the 85 locations evaluated.

**Iowa State University 0 to 3 Node-Injury Rating Scale**

0 = No feeding damage  
 1 = One node of roots (or equivalent) eaten to within two inches of the stalk  
 2 = Two nodes (or equivalent) completely destroyed  
 3 = Three or more nodes (or equivalent) completely destroyed

**Influence of Corn Rootworm Control Method on Yield by Rootworm Pressure**  
Yield Increase Over Untreated Check



## Summary of Yield Results

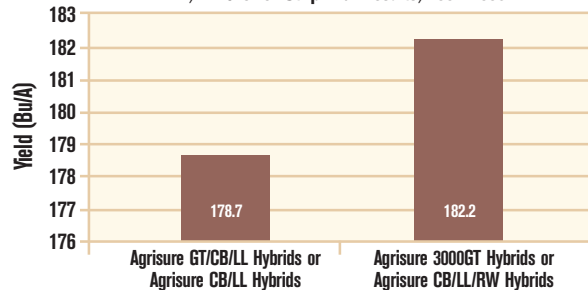
- Under **low rootworm pressure** situations, all management strategies resulted in similar yields.
- At high to very high rootworm pressure situations, **soil-applied insecticides preserved 10-24 bu/A.**
- **Agrisure RW hybrids preserved from 24-38 bu/A** in situations where rootworm populations reached economically damaging levels.

## Summary of Agrisure Isoline Comparison

- Hybrids with Agrisure 3000GT yielded 3.5 bu/A more than hybrid versions with Agrisure GT/CB/LL or Agrisure CB/LL 62% of the time (see graph at right).
- Locally accepted rootworm management practices were used for non-rootworm hybrids.

**Agrisure Isoline Comparison**

\*1,244 Grower Strip Trial Results, 2007-2008



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