Severe Root Damage To Bt Corn Confirmed In Northwestern Illinois

URBANA, ILL.

Severe root damage observed in Bt corn in northwestern Illinois last week should alert growers to carefully consider 2012 seed selection choices, said Mike Gray, University of Illinois Extension entomologist.

On August 16, Gray verified severe corn rootworm pruning on some Bt hybrids that express the Cry3Bb1 protein in Henry and Whiteside counties located in northwestern Illinois. The fields were in continuous corn production systems for many years, and the producers had relied upon Bt hybrids that expressed the Cry3Bb1 protein as their primary protection against western corn rootworm injury.

Lodged plants were common in many areas of the fields, and western corn rootworm adults were numerous and easy to collect. He also found plants with two to three nodes of roots completely destroyed. A shovel was not required for removing the plants from the soil, Gray said.

"Unfortunately, yield losses will be significant in these fields," he added. "In early July, severe storms swept through northern Illinois and caused significant lodging of many cornfields."

Earlier this month Aaron Gassman of Iowa State University confirmed field-evolved resistance by western corn rootworm to the Cry3Bb1 protein in an Iowa study. Resistant western corn rootworm adults were collected by Gassmann from continuous cornfields in northeastern Iowa where significant root damage had occurred. These Iowa fields had been planted with Bt hybrids expressing the Cry3Bb1 protein, Gray said.

The situations in Iowa and Illinois share some common features, he said. Adults were collected from the Illinois fields in question and will be further evaluated for potential resistance.

"I urge you to be very cautious in your choice of hybrids offering corn rootworm protection in light of these developments in Iowa and northwestern Illinois," Gray said. "Many producers have utilized a single-tactic approach for too many years, and now unfortunate consequences are beginning to emerge."

If you encountered less than satisfactory root protection in 2011 with your Bt hybrid, consider the following alternatives for 2012, Gray said.

1. Consider rotation to soybeans or another non-host crop.

2. Consider the use of a corn rootworm soil insecticide at planting.

3. Consider the use of a Bt hybrid that expresses a different corn rootworm Cry protein than one which may have performed poorly in your fields during 2011.

4. Consider the use of a pyramided Bt hybrid that expresses multiple Cry proteins targeted against corn rootworms.

Severe pruning by western corn rootworm larvae to Bt (Cry3Bb1) corn root systems. Photos by Mike Gray, U of I Extension entomologist

Severe lodging caused by western corn rootworm larvae to Bt corn expressing the Cry3Bb1 protein.

5. Consider a long-term integrated approach to corn rootworm management that includes multiple tactics, such as adult suppression programs, use of soil insecticides at planting, rotation of Bt hybrids that express different Cry proteins, and rotation to non-host crops. Δ