

Corn Rootworm Resistance To Bt Seen In Iowa And Illinois

Missouri Grain Farmers Urged To Be On Lookout.

COLUMBIA, MO.

Wayne Bailey, University of Missouri Extension specialist in plant sciences, urges Missouri corn producers to keep an eye out for indications of corn rootworm, caused by continuous planting of Bt hybrid corn on cropland.

Most of the corn planted in the United States is Bt corn, and the Cry3Bb1 toxin is the major one deployed in corn against rootworm.

Bailey will speak at the MU Crop Management Conference, Dec. 18-19 at the Holiday Inn Executive Center in Columbia. The conference is sponsored by the Division of Plant Sciences in the MU College of Agriculture, Food and Natural Resources.

Research at Iowa State University that shows evolving resistance in progeny of adult western corn rootworms collected from northwestern Iowa fields in which Bt hybrids that produce the Cry3Bb1 protein had been planted for several consecutive years. The pest has also been seen in Illinois fields.

Bt hybrids used for corn rootworm control are low- to moderate-dose events that leave survivors in every field. When enough heterozygotes survive and mate, a Bt-resistant population can increase rapidly.

Bailey said there is no evidence of a problem in Missouri yet, but some producers are concerned because Illinois grain producers are seeing it in some counties. He said less than 10 percent of the corn fields in Missouri are at risk. Those at risk include fields planted in corn for three or more continuous years, fields where CryBb1 protein has been used, and those where there is relatively high western corn rootworm

pressure.

He suggests that corn producers watch for evidence of rootworms in spring fields. They can slow growth of rootworm in fields by using soil insecticides in furrow.

Producers who use Cry3Bb1 more than three years should consider an alternate hybrid.

"Yes, you need to be concerned, but not real concerned," Bailey said. "Be vigilant."

Bruce Hibbard, research entomologist for the USDA Agricultural Research Service and a leading expert on rootworms since 1986, has published research documenting resistance to Cry3Bb1 within three generations of selection. He said producers "need options to control rootworms and their options are becoming fewer because of resistance developing in the field."

Crop rotation provides the best defense against rootworm, he said, but there are pockets of farmland that are not in a rotation sequence. This land would include land generally dedicated to producing corn for livestock and ethanol, and geographic pockets where corn has been the only crop planted. "In some regions, rootworm management options are limited because of resistance to Cry3Bb1," he said.

This past summer Hibbard began a small-plot study at MU on rootworm and drought pressure using a rainout shelter. He will continue the study one more growing season before publishing. Preliminary results suggest Pioneer's drought trait in combination with its rootworm trait is highly effective when both drought and rootworm are present.

For more information about the MU Crop Management Conference, go to plantsci.missouri.edu/cmc. Δ



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