Persistence of Bt toxin in Soils. (S11-gunapala163805-Poster)

Authors:

- N.Gunapala* University of Illinois Department of Natural Resources and Environmental Sciences
- M.M.Wander University of Illinois Department of Natural Resources and Environmental Sciences
- J.K.Sims University of Illinois Department of Natural Resources and Environmental Sciences and U.S.Department of Agriculture, ARS

Abstract:

Bt corn (Zea mays L.) that has been genetically modified to express the cry1Ab gene from Bacillus thuringiensis can control European corn borer (Ostrinia nubilalis) and corn root worm (Diabrotica spp.). Concerns about the environmental impacts of this technology need to be addressed before it gains public acceptance. Studies have indicated that Bt toxin released from root exudates and incorporated residues can be stabilized by soil particles and that toxins added to soil can resist degradation and remain larvicidal for several months. The long-term effects of Bt toxin on soils' biota, processes and fertility are not known. Our objective is to develop means to screen soil samples for residual Bt toxin and determine whether it is likely to persist in toxic form when Bt corn is grown using common cultural practices. The development of protocols to determine Bt toxin persistence in field soils using quantitative immunoassay (micro-plate ELISA) and SDS Polyacrelamide Gel Electrophoresis techniques will be presented along with a summary of their relationship to toxicity estimated with bioassays using lepidopteran larvae. A study of 14C labeled Bt toxin fate in soils is also discussed.

Corresponding Author Information: Nirmala Gunapala University of Illinois Dept. NRES, Turner Hall, N-227, 1102 S Goodwin Ave Urbaba, IL 61801

phone: 217-333-4912 e-mail: ngunapal@uiuc.edu

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