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0895: Insect resistance to Bt toxins in Brazil and Latin America

Monday, September 26, 2016

02:15 PM - 02:30 PM

📍 *Convention Center - Room W230 D*

Introduction: In Latin America, cultivation of transgenic crops during 2014/2015, reached 74 million hectares, almost half of the global GM-planted area. Brazil is the largest country cultivating transgenic plants in Latin America, accounting for 57% of planted acreage. The second largest is Argentina, with 24.4 million hectares, followed by Paraguay, Uruguay, Bolivia, Mexico and Colombia. To date, insect resistance to Bt crops has been reported in Puerto Rico and Brazil. In Puerto Rico, resistance was detected in *Spodoptera frugiperda* on Bt-corn expressing Cry1F protein. In Brazil, populations of *S. frugiperda* were resistant to the same toxin, and cross-resistance to Cry1Aa, Cry1Ab and Cry1Ac toxins (present in other transgenic events used in Brazil) was also seen, but cross-resistance to Cry2Aa and Cry2Ab toxins has not been identified.

Methods: Methods included binding competition assays, enzymatic activities and gene expression analysis.

Results/Conclusion: Heterologous competition assays among Cry1F and Cry1A toxins showed that they share binding sites, and therefore it is not recommended to use pyramided plants with these toxins to control *S. frugiperda* or to use other genetically modified crops expressing these proteins in the same agricultural setting. Data from different *S. frugiperda* populations collected at different fields related to their aminopetidase-N, alkaline phosphatase and cadherin activities will be presented. In face of this scenario, it is important that all involved agents (companies, extension services, farmers, scientific community and governments) of GM-producing countries unite their efforts to establish guidelines that will enable greater durability of Bt technologies, either as bioinsecticides or as Bt crops.

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