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0634: Transfer of entomotoxins to non-target insect eggs and potential population and community effects

Monday, September 26, 2016
02:15 PM - 02:30 PM
Convention Center - Room W222 A

Introduction: Research on non-target effects of genetically modified plants has focused primarily on evaluating adverse effects of entomotoxins from *Bacillus thuringiensis* (*Bt*), but few studies have considered intergenerational transfer of these entomotoxins. This presentation will report on two laboratory experiments demonstrating uptake and transfer of *Bt* entomotoxins to the offspring of non-target organisms.

Methods: Bioassays were done to evaluate Cry toxin uptake and transfer to the offspring by immunological methods. One study exposed Cry1Ac to either immatures (3rd instar) or adults of a lepidopteran species, *Chlosyne lacinia* (Geyer) [Nymphalidae]. Another study exposed Cry1F to adults of a widely distributed aphidophagous coccinellid predator, *Harmonia axyridis* (Pallas), using an artificial tritrophic system.

Results/Conclusion: The toxins were uptaken and transferred to the offspring of both non-target species. In the lepidopteran, the toxin did not have adverse effects on the parents, however it increased mortality and development time in neonates of the next generation. In the coccinellid, the toxin did not have adverse effects on the parents or the neonates. In both cases, the transfer to the offspring could result in potentially longer persistence of Cry toxins in the food web, which opens up new routes of exposure to the third and higher trophic levels through cannibalism, intraguild predation and parasitoidism.

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