

## Challenges in the ERA of new insecticidal proteins: A case study of mCry51 for *Lygus* control

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### Abstract

A hypothesis-based approach, consistent with the existing risk assessment paradigm, was developed to characterize the potential for adverse effects to non-target organisms (NTOs) and inform the environmental risk assessment (ERA) for MON 88702 cotton expressing a modified Cry51Aa2 insecticidal crystal protein targeting certain sucking insect pests. For this ERA, well-designed, tiered laboratory bioassays were coupled with higher tier tritrophic studies and a tier 4 field evaluation to generate comprehensive and complimentary data sets demonstrating that the hazard identified for *Orius insidiosus* in lower tier tests did not translate to effects under more realistic conditions. The results of the ERA demonstrate that MON 88702 is unlikely to pose a risk to *O. insidiosus* or other key beneficial taxa under cultivation conditions.

**Key words:** Bt crops, environmental risk assessment, non-target organisms, *Orius insidiosus*