

## Study of Bt impact on caddisflies overstates its conclusions: Response to Rosi-Marshall *et al.*

*To the Editor:* Ecological studies can help ensure that new biotechnologies provide maximum benefit while minimizing detrimental effects. Accordingly, a recent study (1) published in PNAS is appropriate but lacks the genetic and toxicological components necessary for proper execution and interpretation.

The study used different maize hybrids. Because all maize hybrids differ in many traits, any trait that differs between the hybrids, e.g., the level of trypsin inhibitors present, could easily explain the results. Because isogenic lines were not used, it is impossible to attribute the observed effect to Bt as opposed to any other factor that differed.

The study assumed that pollen from currently grown Bt maize contains toxic levels of Bt when the levels in pollen are negligible (2) and innocuous (3). The presence and type of Bt toxin was never verified or quantified. If any Bt was present,

the level administered to the larvae is unknown. Yet, dose-response measurements are key to establishing toxicity.

Even if their results were really due to Bt, it is impossible to extrapolate with any confidence from an aquarium to a whole ecosystem where many more variables come into play.

Given these limitations, the conclusion that “widespread planting of Bt crops has unexpected ecosystem-scale consequences” is untenable. The data cannot even support the more tentative conclusion that “Bt corn byproducts may have negative effects,” because no cause and effect was shown specific to Bt.

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2. Mendelsohn MJ, Kough J, Vaituzis Z, Matthews K (2003) Are Bt crops safe? *Nat Biotechnol* 21:1003–1009.
3. Hellmich RL, *et al.* (2001) Monarch larvae sensitivity to *Bacillus thuringiensis*-purified proteins and pollen. *Proc Natl Acad Sci USA* 98:11925–11930.

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The author declares no conflict of interest.

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