portions of natural enemy populations (Van den Bosch and Messenger 1973). Unlike broad-spectrum insecticides, Bt proteins are specific in their toxicity and typically cause little or no direct mortality to natural enemies (Charles et al. 2000). Thus, sprays of Bt proteins have long been valued in organic farming and in integrated pest management (Mellon and Rissler 1998). Results of studies evaluating interactions between natural enemies and Bt corn listed in Table 1 of Obrycki et al. (2001) show 13 examples with no effect, three with negative effects, and two with positive effects.

In conclusion, we support a cautious approach to agricultural biotechnology, including thorough evaluation of advantages and disadvantages on a case-by-case basis. This approach can avoid the naive optimism that accompanied the advent of broad-spectrum insecticides while increasing the chances that the potential benefits of transgenic crops will be realized.

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Response from Obrycki and colleagues: Our intended focus in the boxed statement at the beginning of our article was Bt transgenic corn developed for lepidopteran insect pests. As Tabashnik and colleagues pointed out, this was not clearly conveyed by our statement. The second point raised by Tabashnik and colleagues questions the possibility that Bt corn could lead to similar types of ecological problems observed with the overuse of insecticides, because Bt toxins do not have broad-spectrum activity, thus natural enemies will not be directly killed. We agree that because of the selective nature of the Bt toxins, direct mortality of natural enemies will not occur. However, we argue that alternative mechanisms—for example, elimination of hosts for natural enemies within transgenic fields because of high levels of Bt toxin expression in transgenic hybrids—may play a role in ecological processes, leading to pest resurgence and replacement. These ecological and evolutionary processes will proceed within the currently defined planting regimes for resistance management and will require continued study. We strongly agree with the conclusion of Tabashnik and colleagues that a cautious approach to each type of transgenic crop is needed, including Bt corn developed for corn rootworms (Gray 1999, 2000). Our article was an attempt to outline this type of approach for transgenic Bt corn developed for lepidopteran insect pests.

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