

Safety Assessment of YieldGard® Insect-Protected Corn Event MON 810

Executive Summary

Using modern biotechnology, Monsanto has developed insect-protected YieldGard® corn, event MON 810, that produces the naturally occurring *Bacillus thuringiensis* (*Bt*) protein, Cry1Ab. YieldGard corn is protected from feeding damage by the European corn borer (ECB, *Ostrinia nubilalis*), the southwestern corn borer (SWCB, *Diatraea grandiosella*) and the pink borer (*Sesamia cretica*).

The Cry1Ab protein produced in YieldGard corn binds to specific receptors in the midgut of sensitive insects, but does not affect mammals or insects that lack those receptors. Therefore, the Cry1Ab protein has selective toxicity to specific lepidopteran insects but is harmless to humans, fish, wildlife and beneficial insects that can help control other pests. *Bt* proteins have been used safely for nearly 40 years in microbial insecticides.

The safety of the Cry1Ab protein in YieldGard corn has been thoroughly evaluated. These tests confirm that the protein is present at very low levels in the grain and food; is rapidly degraded in simulated gastric fluids; shows no similarity to known allergens; and shows no harmful effects to animals when fed at very high levels.

Compositional analyses of the grain and forage of YieldGard corn grown in various environments over several years show that the levels of the key nutrients in YieldGard corn are comparable to the levels found in conventional corn hybrids. In addition, the safety of the feed produced from YieldGard corn has been confirmed through animal feeding trials. These studies show that animals perform in a comparable manner when fed biotechnology-derived and conventional corn products. YieldGard corn plants are equivalent to other corn varieties in disease susceptibility and other agronomic and morphological characteristics. YieldGard corn improves grain quality by reducing insect damage in ears, one of the main pathways by which mold infects grain, and reduces losses caused by some grain pests during storage.

The environmental assessment shows that YieldGard corn does not harm agriculturally beneficial insects, including honeybees, ladybird beetles, green lacewings or predatory insects and spiders. YieldGard corn is unlikely to have any significant impact on Monarch butterfly populations due to limited exposure. In addition, the Cry1Ab protein produced in YieldGard corn is rapidly degraded in soil and has no effect on soil invertebrates, including earthworms and collembola.

These studies demonstrate that the Cry1Ab protein is safe to humans, animals, non-target organisms and beneficial insects, and that the forage and grain of YieldGard corn plants are as safe and nutritious as conventional corn varieties.

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