

Impact of Biotechnology

Ric Bessin

Agricultural biotech crops on the market today have been given genetic traits from other organisms to provide protection from pests and tolerance to pesticides or to improve food and feed quality. To transform a plant, the gene that produces the trait of interest is identified and separated from the rest of the genetic material in a donor organism. Most organisms have thousands of genes, and a single gene represents only a tiny fraction of the total genetic makeup of an organism. A donor organism may be a bacterium, fungus, or even another plant species. In the case of Bt corn, the donor organism was a naturally occurring soil bacterium, *Bacillus thuringiensis*, and the gene of interest produces a protein that kills Lepidoptera larvae, in particular, European

corn borer. The donor gene along with a genetic promoter (which turns the gene on in the corn plant) and a genetic marker (which allows plant breeders to quickly identify transformed plants) were inserted into corn embryos. These new genes are then incorporated into commercial corn hybrids using traditional backcrossing breeding methods.

Plants produced through biotechnology are closely regulated by the USDA APHIS, the EPA, and the FDA. Producers should not select a hybrid based solely on the fact that it is biotechnology derived. Selection of a biotechnologically derived hybrid for pest-resistant traits should depend on whether the resistant traits are needed. Likewise, selection of biotechnologically derived hybrids

with improved food or feed quality should depend on market value and profit potential.

Producers wanting to use ag biotech hybrids should always check with their grain buyers prior to seed purchase to be certain that these hybrids are approved and will be accepted at the market. Some biotech crops have not been approved or accepted in certain markets. The recall of foods containing traces of StarLink corn taught us an important lesson that the utmost care must be taken to prevent commingling of grain intended for different markets. Because corn is pollinated with wind-blown pollen, field isolation of up to 660 feet may be needed to prevent cross-pollination between different hybrids to ensure product identity.