

Bt Sweet Corn: What Is It and Why Should We Use It?

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Transgenic Bt sweet corn hybrids are a genetically modified organism (GMO) that are the result of combining commercially available sweet corn varieties with genes from a naturally occurring soil bacterium called *Bacillus thuringiensis* Berliner or Bt. A single gene from the Bt bacterium called CRY1A(b) is inserted into the genome of the sweet corn plant creating a plant that expresses high levels of Bt in its cells, resulting in improved pest resistance in the green leaf, silk, and kernel of the plant to lepidopterous insects such as the european corn borer, *Ostrinia nubilalis* (Hubner) and the corn earworm, *Helicoverpa zea* (Boddie). This is not the first time that Bt has been used to genetically modify a crop for agronomic purposes. Other types of Bt crops include broccoli, cabbage, potato, canola, cotton, corn, eggplant, soybean, and tomato.

The use of Bt crops is an attempt to get away from the traditional reliance on chemical pesticides to control insects and towards a more economically and environmentally sound system of pest control. Genetic engineering of pest resistant varieties of crop plants is a crucial tool in the arsenal of an Integrated Pest Management (IPM) system. The use of transgenic plants such as Bt sweet corn can result in several significant advantages over a more typical commercial system.

They include: Timing - Timing of insecticide applications are often crucial for effective pest control. Bt corn is effectively at work the entire time the plant is in the field thus providing around the clock protection. Applicator safety - The CRY1A(b) protein is harmless to humans making sweet corn seed and plants safe to handle, unlike many pesticides where specialized equipment is needed for application and handling. Biological Control - The use of Bt sweet corn is compatible with Biological Control efforts in the field. Limited impact on Non-Target organisms - Bt sweet corn will only effectively kill or reduce lepidopteran insect populations that actively feed on the corn plant itself. This results in a reduction of non-target deaths of beneficial insects that can result from the use of many broad-spectrum insecticides. Decreased Farming Costs - The use of Bt sweet corn can provide a reduction of 5-7 insecticide sprays. This is in addition to the reduction of intensive pest monitoring necessitated by the need for timely application of insecticides (see "Timing" above). Combined these more than offset the increased cost of Bt seed corn.

In summary Bt sweet corn provides greater economic return to the grower and in the long run to the consumer. Use of Bt sweet corn also makes ecological sense when compared to traditional reliance on broad-spectrum insecticides that can be dangerous and non-selective.

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