

Enrichment**LESSON 2****GM Crops**

In Colorado, the potato beetle plagued potato crops for years. Potato beetles would eat an entire field, leaving nothing but stems.

In the past, farmers used chemical pesticides to control the beetle. But pesticides can contaminate soil and water. Some pesticides are linked to cancer. Farmers were left with a difficult choice—use chemicals that could potentially pollute the land or let the beetle destroy the potato crop.

Fortunately, scientists gave farmers a third option—a “smarter” potato that could fend off the beetle on its own.

Gene Modification

Researchers developed the disease-resistant potato using gene modification. Gene modification is a type of biotechnology that is used to improve plants, animals, and microorganisms. In the case of the potato, researchers inserted a gene that changed the DNA of the potato. The potato now contains an organic pesticide, or biopesticide, that is deadly to the beetle.

Approximately 56 million hectares of American farmland are planted with genetically modified (GM) crops. Use of the technology is increasing in certain Asian,

African, and Latin American countries where hunger and malnutrition are epidemic. Scientists are focusing on developing GM crops that are more nutritious and more disease-resistant. For example, researchers have developed a rice plant that contains iron and vitamin A, and a genetically altered sweet potato that resists a destructive virus.

Concerns over GM Crops

GM crops hold much promise for reducing malnutrition and starvation. However, their use raises several concerns. The genes of GM plants might cross-fertilize with wild plants and create “superweeds.” These superweeds could become resistant to herbicides and compete with food crops for limited space. In addition, pests targeted by disease-resistant GM crops might mutate and become even more difficult to control.

There are also concerns for human safety. Opponents fear that allergies and other illnesses could result from eating GM crops. They point out that scientists likely do not know all the potential effects of these crops on humans and the environment. Already, studies indicate that the pollen from one variety of GM corn kills the caterpillar *Danaus plexippus*, the larva of the monarch butterfly.

Applying Critical-Thinking Skills

Directions: Answer each question.

- 1. Summarize** What problems prompted scientists to begin developing GM crops?
- 2. Evaluate** Do you think the use of GM crops should be expanded? Why?