

GMOs could save the world

Growing population causing need for more food

By Mandi Vest
THE BATTALION

Scientists try to predict world population numbers and when Earth will reach its carrying capacity, which may be determined by one vital thing — food. The world population reached 6 billion in 1999. The number will reach 7 billion in 2012, 8 billion by 2027 and 9 billion by 2047, the U.S. Census Bureau reported.

Researchers at Texas A&M have been concerned about increasing food production. A solution to this ever-present problem could be genetically modified (GM) crops.

Soil and crop scientists seek to find solutions for disease resistance, improved nutritional value and the ability of crops to survive in drought, flood or frost conditions. Pesticides and herbicides, which pose environmental risks, have been used to alleviate such problems, but genetic modification of crops can lead to reduced chemical use.

Dr. David Stelly, director of the Laboratory for Plant Molecular Cytogenetics, said researchers strive to minimize use of chemicals that are hazardous or toxic. Pesticides can affect higher organisms, even humans.

"Think from a world standpoint. Think about a farmer in India who has two acres of land. He uses chemical pesticides, herbicides and fertilizer, which he applies himself, not with a tractor. The exposure he sustains from this poses a great threat to his health," Stelly said.

By modifying the genetic makeup of plants, disease resistance is improved, thus increasing crop yields. In Stelly's department, researchers analyze Bt cotton, a genetically modified crop.

A strain of a bacterium, called Bacillus, produces a substance that serves as a natural pesticide when it is ingested by insects. This substance is not toxic to animals or humans.

Scientists found a way to incorporate the genes from the bacterium, which are responsible for producing the substance, into the DNA of the plant. They hoped the plant would use the new genes to produce the same natural pesticide. After much trial and error, the experiment showed success. Now there is Bt cotton and Bt corn, which are resistant to many types of insects.

This is just one example of genetic modification. Another useful genetic modification is Roundup Ready soybean, cotton and corn. These organisms are resistant to the herbicide Roundup, a common chemical used in agriculture. The herbicide, which is applied to fields as plants mature, is not selective to what plants it affects. Crops would be killed by Roundup if not for genetic modification.

Dr. Keerti Rathore, assistant professor in the Institute for Plant Genomics and Biotechnology, said Roundup Ready crops are very beneficial in agriculture. The amount of ground tillage is reduced and competing weeds are killed. In the United States, 60 to 70 percent of soybean



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planted is Roundup Ready.

Rathore said presently there are two ways crops are genetically modified in the lab: through Agrobacterium incorporation or with a gene gun. Agrobacterium is a bacterium that inserts its own genes into the DNA of plants, so scientists use this bacterium as a gene-vector. First, the genes that will be

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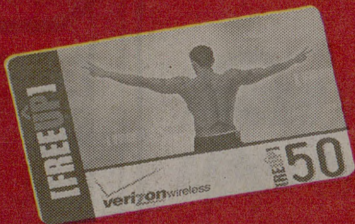
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