

## Genetically Engineered Crops

***What are genetically engineered organisms?***

Scientists create genetically engineered organisms (GEOs)—also referred to as genetically modified organisms—by directly manipulating a living creature’s genetic makeup, or DNA. This is usually performed by transplanting genetic material from one organism to another or by rearranging an organism’s existing genes. Genetic engineering is a common practice in United States agriculture, allowing scientists to create organisms (primarily new crop varieties) with desired characteristics like disease or pest resistance and herbicide tolerance.

***What is an example?***

Bt corn is a corn variety infused with a gene transplanted from the soil bacterium *Bacillus thuringiensis*. The foreign gene causes the corn plant to produce a protein generally considered safe when ingested by most insects, mammals (including humans), birds, and fish but fatal to the corn borer, a destructive insect. The federal government and the Minnesota Department of Agriculture (MDA) first authorized the commercial use of Bt corn in 1995.

***Are agricultural GEOs regulated?***

Laws and regulations at both the federal and state levels govern the planting, transportation, and sale of genetically engineered crops. In general, GE crops are developed in secure facilities then—with government approval—planted in outdoor test plots and monitored. If the GEO’s owner can demonstrate that the crop does not pose unreasonable harm to humans or the environment, the crop may be deregulated and made available for commercial use.

***What agencies are involved?***

Guided by a “coordinated framework” adopted in 1986, three federal entities share oversight responsibility for agricultural GEOs: the Department of Agriculture (importation, interstate movement, and field trials), the Environmental Protection Agency (GE pesticides and pesticides genetically incorporated into plants), and the Food and Drug Administration (safety of GE food and feed).

When a seed company, university, or other entity intends to release (i.e., transport, plant, or sell) a GE crop in Minnesota, it must first apply to the MDA for approval. In 1991, Minnesota lawmakers directed the state’s Environmental Quality Board to regulate genetically engineered organisms. It soon became apparent that GE crops made up most if not all of the GEO activity in the state. In 1994 the legislature transferred oversight of most genetically engineered plants, animals, pesticides, fertilizers, soil amendments, and plant amendments to the MDA. The department has the authority to deny the request or attach additional conditions to the release even if the federal government has cleared the plant for monitored field trials or deregulated commercial use.

***What criteria does the MDA use?***

The MDA’s permitting process is designed to “protect humans and the environment from the potential for significant adverse effects [of GEO releases]...taking into account the environmental costs and benefits.” [Minn. Stat. §§ 18F.01 and 18F.02](#). The department reviews information provided by the applicant along with any decisions made by federal agencies pertaining to the proposed release. Specifically, the MDA considers such factors as the past performance of similar releases, the potential for the GEO’s genetic material to transfer to other organisms, and the likelihood that the GEO will harm nontarget organisms or otherwise negatively affect the environment.

***Which GEOs have been approved and can now be grown by farmers?***

The MDA has approved GE varieties of the following crops: barley, canola, corn, potato, soybean, squash, sugarbeet, sweet corn, tomato, and wheat. In addition, the state has approved a GE version of rhizobium—a soil bacterium capable of fixing nitrogen in the soil.

***Do Minnesota farmers plant GEOs?***

In general, farmers in Minnesota and across the country have adopted GE corn and soybeans. According to the USDA, GE varieties comprised almost 90 percent of all corn planted in Minnesota in 2012. In 2000, GE corn was a significantly smaller share of the total, at 37 percent. For soybeans, Minnesota farmers planted 91 percent of total acres to GE varieties in 2012, up from 46 percent in 2000. Farms nationwide displayed a similar trend over the period, with GE corn growing from 25 percent in 2000 to 88 percent in 2012, and GE soybeans up from 54 percent to 93 percent over the same period.

Responding to consumer demand for GEO-free foods, a portion of Minnesota farmers do not grow GE crop varieties. Under state and federal law, certified organic farmers and handlers cannot grow or process GE crops. [Minn. Stat. § 31.925](#).

***How do Minnesota’s laws compare to those in other states?***

A 2004 study by the Pew Initiative on Food and Biotechnology found that most states did not have specific regulations or permitting procedures for agricultural GEOs. Of those that did, Minnesota was the only state with a comprehensive set of laws and regulations that create a separate permitting system specifically for GE crops. The MDA may require an applicant to provide any information it sees fit and may attach any conditions it deems necessary to ensure that the release does not pose an unreasonable risk. The department is also authorized to inspect test plots and revoke or amend a permit should it find any violations.

***Are traditional methods considered GE?***

No, traditional agricultural practices such as the selective breeding of livestock or the hybridization of crops are not considered genetic engineering under Minnesota law.

**For more information:** For policy matters, contact legislative analyst Colbey Sullivan at 651-296-5047. Those interested in releasing a GEO in Minnesota should contact the Minnesota Department of Agriculture directly at 651-201-6000 or 1-800-967-2474.

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