



7 Facts about Genetically Engineered Food

Fact No. 1: **Genetic engineering (GE) is a laboratory technique.**

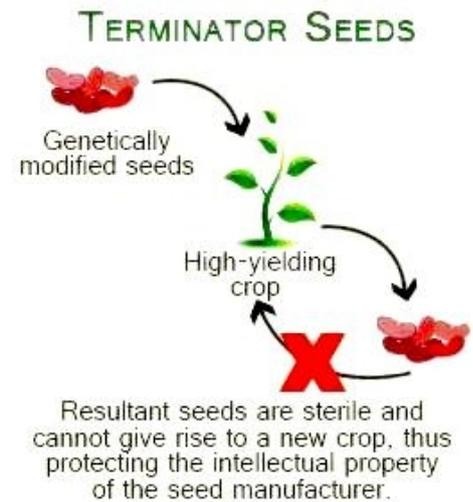
Genetic engineering is a laboratory created seed technology that was commercialised for farming in 1995. It is an artificial process that is totally unnatural.

Transgenics: is where a cell has been altered by the random insertion of DNA from another species through laboratory engineering.

Gene Editing: (CRISPR, TALENS, ZFN, dsRNA) an RNA enzyme cuts the chromosome and either deletes a gene/s or inserts an artificial gene.

Gene drives force harmful genes through the whole population of a species posing major risks to ecosystems as they can't be recalled. These may spread to native relatives, and could make keystone species extinct.

GE usually employs bacterial and virus DNA/RNA to smuggle in the inserted genes. These altered genes are present in every cell of the plant.



Fact No. 2: **Genetic engineering is imprecise and uncontrollable**

Gene editing tools like CRISPR can create unintended alterations (off target effects). The random insertion of foreign genes, even a single amino acid, into the genetic material may cause unexpected changes in the functioning of other genes. Existing molecules may be manufactured in incorrect quantities, at the wrong times, or new molecules may be produced. GE foods and food products may therefore contain unexpected toxins or allergenic molecules that could harm our health or that of our offspring.

Nature has developed a complex and resilient way to ensure that their genes in the seeds are adapted to the next generation. Genes do not operate in isolation rather they interact in a complicated way, changing their behaviour in response to influences from other genes.

Although a gene can be cut out from the DNA of an organism, its insertion into the DNA of another organism is entirely random. This results in the disruption of the order of the genes on the chromosome and may result in random and unexpected changes in the functioning of the cells.

Food Standards Australia New Zealand (FSANZ) has exempted from labelling GE food that is imported, highly processed, or prepared on the premises (like supermarket bread and restaurant foods) containing less than 1% GE material.

Fact No.3: **GE food has not undergone trials for safety**

We rely on the assessments carried out by Food Standards Australia New Zealand (FSANZ), based largely on data supplied by biotechnology companies.

Gene editing is able to force genetic changes by overriding cell repair systems that have evolved over millennia to protect vital areas of DNA from random mutations. The resulting GE food could not have occurred in nature, so these plants have no history of safe use as food. Independent long-term testing is required before we can be sure that GE food is safe to eat.

Fact No.4: **All organic food and produce grown in New Zealand is non-GE**

GE products may be found in foods containing the following **imported** ingredients:

- Soya flour (often in breads, sausages, etc.)
- Lecithin (in chocolate, ice cream etc.)
- Vegetable Oils (canola, soy, cotton seed, corn, rice oil)
- Corn (maize).
- Potato flour
- Wheat flour
- Yellow Rice



Fact No.5: **GE crops have increased pesticide use**

Crops engineered to be resistant to specific herbicides have multiple genes (stacked) allowing the crop to be sprayed with up to 6 herbicides. Since 1998, pesticide residues have increased by 200 times. Super weeds and insect resistance are now plaguing farmers in the Americas, leading to more pesticide use on the plants.

Cross-pollination occurs between GE crops and non-GE crops and their wild relatives from insects, birds and the wind carrying genetically altered pollen into neighbouring fields and far beyond. The GE contaminated seeds are then resistant to weedkiller, for example, making them more difficult to control. There is evidence that crops engineered to produce their own insecticide can harm soil organisms and beneficial insects. GE plant exudates poison the soil and loss of food source for insects and birds has caused a devastating decline in pollinators (bees and butterflies) and certain bird species.

Fact No. 6: **GE crops do not benefit farmers or the environment**

Seeds of genetically engineered crops are patented and more expensive than those of conventional crops. Farmers report that yields on average are no better and have not improved profitability. Insurance companies in the USA and UK do not insure farmers for losses from growing GE crops. Farmers growing GE crops have to sign binding contracts with the biotechnology producers. These commit them to using only the herbicides produced by that company and prohibit them from the traditional practice of saving seed for the next season.



Fact No. 7: **Organics is climate action**

The Rodale 30-year farming study found GE crops have no improvement in yield compared to existing non-GE crops. The study found that crops, performance, cost and yield from organic growing outperformed conventional growing methods, especially in climate disturbed years. Heritage breeding of new varieties is faster than GE. Heritage seeds have complex traits that have adapted to many climate and soil conditions over the millennia.

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