What is GMO?

Agricultural Crops That Have a Risk of Being GMO

GMOs, or "genetically modified organisms," are plants or animals created through the gene splicing techniques of biotechnology (also called genetic engineering, or GE). This experimental technology merges DNA from different species, creating unstable combinations of plant, animal, bacterial and viral genes that cannot occur in nature or in traditional crossbreeding.

For consumers, it can be difficult to stay up-to-date on food ingredients that are at-risk of being genetically modified, as the list of at-risk agricultural ingredients is frequently changing. As part of the Non-GMO Project's commitment to informed consumer choice, we work diligently to maintain an accurate list of risk ingredients.

Agricultural products are segmented into two groups: (1) those that are **high-risk** of being GMO because they are currently in commercial production, and (2) those that have a **monitored risk** because suspected or known incidents of contamination have occurred and/or the crops have genetically modified relatives in commercial production with which cross-pollination (and consequently contamination) is possible. For more information on the Non-GMO Project's testing and verification of risk ingredients and processed foods, please see the Non-GMO Project Standard.

High-Risk Crops (in commercial production; ingredients derived from these must be tested every time prior to use in Non-GMO Project Verified products (as of December 2011):

- **Alfalfa** (first planting 2011)
- **Canola** (approx. 90% of U.S. crop)
- **Corn** (approx. 88% of U.S. crop in 2011)
- **Cotton** (approx. 90% of U.S. crop in 2011)
- **Papaya** (most of Hawaiian crop; approximately 988 acres)
- **Soy** (approx. 94% of U.S. crop in 2011)
- **Sugar Beets** (approx. 95% of U.S. crop in 2010)
- **Zucchini and Yellow Summer Squash** (approx. 25,000 acres)

Listed in Appendix B of the *Non-GMO Project Standard* are a number of high-risk inputs, including those derived from GMO microorganisms, the above crops or animals fed these crops or their derivatives.

Monitored Crops (those for which suspected or known incidents of contamination have occurred, and those crops which have genetically modified relatives in commercial production with which cross-pollination is possible; we test regularly to assess risk, and move to "High-Risk" category for ongoing testing if we see contamination):

- Beta vulgaris (e.g., chard, table beets)
- Brassica napa (e.g., rutabaga, Siberian kale)
- Brassica rapa (e.g., bok choy, mizuna, Chinese cabbage, turnip, rapini, tatsoi)
- Cucurbita (acorn squash, delicata squash, patty pan)
- Flax
- Rice
- Wheat

Common Ingredients Derived from GMO Risk Crops
Amino Acids, Aspartame, Ascorbic Acid, Sodium Ascorbate, Vitamin C, Citric Acid, Sodium Citrate, Ethanol, Flavorings ("natural" and "artificial"), High-Fructose Corn Syrup, Hydrolyzed Vegetable Protein, Lactic Acid, Maltodextrins, Molasses, Monosodium Glutamate, Sucrose, Textured Vegetable Protein (TVP), Xanthan Gum, Vitamins, Yeast Products.

You may also be wondering about...

- **Tomatoes**: In 1994, genetically modified Flavr Savr tomatoes became the first commercially produced GMOs. They were brought out of production just a few years later, in 1997, due to problems with flavor and ability to hold up in shipping. There are no genetically engineered tomatoes in commercial production, and tomatoes are considered "low-risk" by the Non-GMO Project Standard.
- **Potatoes**: Genetically modified NewLeaf potatoes were introduced by Monsanto in 1996. Due to consumer rejection by several fast-food chains and chip makers, the product was never successful and was discontinued in the spring of 2001. There are no genetically engineered potatoes in commercial production, and potatoes are considered "low-risk" by the Non-GMO Project Standard.
- **Salmon:** A company called AquaBounty is currently petitioning the FDA to approve its genetically engineered variety of salmon, which has met with fierce consumer resistance. Find out more here.
- **Pigs**: A genetically engineered variety of pig, called Enviropig was developed by scientists at the University of Guelph, with research starting in 1995 and government approval sought beginning in 2009. In 2012 the University announced an end to the Enviropig program, and the pigs themselves were euthanized in June 2012.