

## Get To The Root Of The Difference: Biotechnology Versus Organic Seeds

Leimone Waite, Master Gardener, Dec. 13, 2019

**Q.** As I order seeds for next year's garden I am concerned about genetically engineered (GE) or genetically modified organism (GMO) seeds. How can I be sure I'm not buying GE seed? Can you recommend any suppliers?

**A.** With new methods of genetic engineering that modify existing genetic structure within the plant species — such as gene editing, deletion and multiplication — rather than rely on the transfer of genetic material from one species to another — transgenic, it's harder to test for GE material in seeds. There aren't requirements to test for these in seed. The reason for this is apparently that genetic drift — genes from one field blown or carried by insects or birds to another field — assures a certain mixing of GE and organic materials, and testing for their presence in the seeds' DNA may be very difficult.

With that said there are very few vegetable crops grown that are genetically modified, these include corn, soybeans, squash and potato. Of these crops, corn is the one most likely to have genetic drift, as it's pollinated by the wind.



File photo from August 2017 - Canadian officials said three types of potatoes genetically engineered by an Idaho company to resist the pathogen that caused the Irish potato famine are safe for the environment and safe to eat. (Photo: Nicolas Champouret, AP)

For the crops that have a GE version such as sweet corn, the best way to ensure that you are getting seed that is not genetically engineered is to purchase certified organic seed. Organic growers are required to have measures in place to insure that they keep their crops away from GE crops that could possibly cross pollinate with their crop. This includes having a buffer zone between the organic crop and a non-organic crop. Buffer zones protect certified organic crops and land from prohibited substances such as unapproved synthetic pesticides and excluded methods like GMO cross-pollination. In addition to buffer zones organic operations implement preventive practices such as planting their seeds early or late to avoid organic and GMO crops flowering at the same time, which can cause cross-pollination. Others harvest crops prior to flowering or sign cooperative agreements with neighboring farms to avoid planting GMO crops next to organic ones.

According to the University of California, current regulations specify no acceptable level of genetically modified materials using transgenic process in organic products. And recently the National Organic Standards Board who advises the United States Agriculture Department (USDA) on organic regulations and practices has recommended that the new genetic engineering processes like CRISPR Cas9 — that edits and deletes genes — also be excluded from Certified Organic production, so even with new GE methods entering commercial production organic producers will still need to ensure GE material does not enter their crops.

As Master Gardeners we hesitate to recommend any one supplier but a local source for organic seeds is Redwood Organic Seeds. They are a family farm and grow most of their seeds near Manton and can be found at some local stores such as Holiday Market or Wyntour gardens or online at [www.redwoodseeds.net](http://www.redwoodseeds.net).

A couple other sources for non GE seeds would be Seed Savers Exchange and Baker Creek Rare Seeds. Seed Savers can be found at <https://www.seedsavers.org/>. They specialize in preserving heirloom seeds that are not necessarily certified organic but are grown from old garden plant varieties. And Baker Creek Rare Seeds has many unusual vegetable varieties and a beautiful catalog that is worth ordering just to enjoy the artful photography. They can be found at [www.rareseeds.com](http://www.rareseeds.com).

*The Shasta Master Gardeners Program can be reached by phone at 242-2219 or email [mastergardener@shastacollege.edu](mailto:mastergardener@shastacollege.edu). The gardener office is staffed by volunteers trained by the University of California to answer gardeners' questions using information based on scientific research.*