

**Program:** Genetically Modified Plants: Marvel or Malady

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**Introduced by:** Karen Bumb

**Guests:** Rodney Basson, Bob Brown, Greg Graivger, Paul Kellogg, Ed Koolish, Lisa Murphy, Bev Robinson

**Attendance:** 136

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The topic today covers the science of GMOs (Genetically Modified Organisms), how they are made, what they are used for and the general concern about them.

In 1983 new methods were developed to transfer genes into plants. Genes can now be used from any source to modify and improve crop plants. *Agrobacterium tumefaciens* can be used as a transfer agent to transfer DNA from one plant to another. Using this transfer method, plants can be made resistant to herbicides. Genes from another bacterium can be used to make Bt toxins that kill various insects.

Transgenic crops have been widely adopted in the United States. In spite of their wide adoption here, there are concerns and fears about GMOs worldwide. All crop plants and livestock have been genetically modified during the process of domestication, which has been occurring over the past 5000 years. Many unnatural methods are used to develop improved crop varieties using such things as radiation, chemicals, and chromosome manipulation.

Weeds have evolved resistance to glyphosates, other herbicides and insecticides. Continued efforts need to be made in gene editing to get the desired results. This is an ongoing but imperfect process.

GMOs have been declared safe by the American Association for the Advancement of Science, the National Academy Science and the American Medical Association.

Transgenic methods cannot produce all of the desired types of genetic modification required. Gene editing has been recently introduced. Recently a very popular method referred to as CRISPR has been developed. This and other techniques are used to accelerate plant breeding in a single generation.

GMOs and other new genetic techniques are needed to supply food for a growing population. Some accommodation must be made since there is no new land being developed for crops and indeed the available land on earth in many areas is being reduced to accommodate other needs of a growing population. Climate change will further reduce available land for food production.

It is difficult to understand the fear surrounding GMO foods. Although 88% of scientists believe these foods are safe, only 37% of the general population agrees with this. It is important to provide information of this type explaining the science and engaging in discussions with the skeptical populations.



**Dr. Peter Goldsbrough**