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|  **GMO: Genetically Modified Organism and Some of the Controversy that Surrounds Them.**  | Sara A. Poodry |

**GMO: Genetically Modified Organism and Some of the Controversy that Surrounds Them**

The title of Genetically Modified Organism is a special one, it signifies a leap in the advancement of science to aid in the development of foods, however to benefit us, the human population. This advancement is due in large part to the advancements of biotechnology. Science takes a normal plant base (normal plant or animal DNA) and adds traits to the strain that are advantageous to the grower. Examples of some of the traits added to the DNA include but are not limited to the following: Vitamin A increase, disease resistance, longer life and decreased length of dormancy.

Science first approved breakthrough in the world of GMO’s came in the form of Golden Rice. Fortified foods were used as a humanitarian tool in many underprivileged countries where Vitamin A deficiency was of concern and more prevalent than other parts of the world. It took genetic makeup from daffodils and the bacteria Erwinia uredovora and created a more beta carotene enriched source. It was more widely accepted in the world due to this humanitarian aid, however still met with skeptics that still plagues the GMO today.

 One key health related issue that can create heated arguments is that of GMO’s and their relation to food allergies. Brazil nuts give can send some individuals with an allergy to nuts into anaphylactic shock and possibly death. Protein form Brazil Nuts have been input in to the soy bean crop, exposing some individuals to possible unknown risk.

 However The Food and Drug administration is well aware of the risk that this could pose and has taken precautions to minimize any risk. This includes allergen testing on individuals with this type of allergy, small pin pricks using the new soybean protein are used on the individual and doctors look for any sort of reaction, based on that study no difference was seen 100 percent of the time. The FDA evaluates and assess many in similar way and not all have passed, one example is Starlink, the protein did elicit responses in individuals and thus was approved only for the use of pet foods.

Another argument against, is that of Toxicity in plants. Plants use toxicity as a form of self defense against predators. Humans are not immune to the toxins and have been known to die after consumption of many varieties. Toxicity of the genetically engineered plants is monitored and observed by the FDA. They are checked against the range of the original species that was not altered and only allowed on the market if no significant difference exists.

Weediness as odd as it may sound is associated with many of the GMO plants, due in large part to the definition of the term “weed.” GMO’s in their forms have many of the following traits; decreased dormancy, increased vitality, wider dispersal, altered plant growth, can survive winter in some cases, and produce more seeds for longer periods of time, however advantageous these traits are they can be seen as detrimental to nature. If “something” changes and mutates or even has the potential to harm humans you will see public disapproval and all the plants carry this possibility of the unknown. The United States Department of Agriculture actually has a branch Called APHIS that helps evaluate GMO’s and handles and treats all of them as weeds, as a precaution.

Genetic Use of Restriction Technology was approved by the USDA to help with the issue of plants continuing to breed with the tampered DNA and our not having a knowledge of where this will turn. GURT for short has a kill switch if you will it contains a specific gene that will end the plant and its ability to reproduce if we so deem. Special chemicals are sprayed on the plant to end its effectiveness or genes can be rendered inactive after a predetermined number of generations. Problems with this idea include small farm economical structure that depend on seed saving strategies if they have a predetermined life of reproduction between generations than the seeds will eventually become inactive, and thus so will the farmer crop.

This issues are just a few of the controversies that Surround GMO’s they have led to consumer outcry. Polling and consumer awareness studies have determined that as much as 90% of consumers would like labeling of some sort on the products that “contain” or “may contain” these GMO’s. Labeling is difficult and can be detrimental to the producers. Examples to this are negative reactions to the labels, difficult to track the crops from farm to fork especially in processing, and crossbreeding that is accidental in close crops. May products cannot even be tested as to a difference because significance does not exist between the Natural and the GMO product. Cost for testing, and tracking will be seen by the consumer. However FDA does mandate that labeling for the GMO if “ some nutritional difference exists,” however vague it draws the line at nutrition. Other nations have started to require the labeling however it is mainly unseen in the US Market.

Overall most of the arguments are hypothetical and not determinable at this time which leads to more controversy surrounding these GMO’s. No serious issues have been seen and since many of our crops are becoming largely GMO’s this may never be an issue. However both sides are valid.

**Sources**

**Cornell University GMO Information**

[**www.geo-pie.cornell.edu/regulation/reg.html**](http://www.geo-pie.cornell.edu/regulation/reg.html)

**Electronic Forum for Biotechnology for Food in Agriculture**

[**http://www.fao.org/biotech/C9doc.htm**](http://www.fao.org/biotech/C9doc.htm)