# Advantages And Disadvantages To GMO Crops

When it comes to the field of nutrition, there are a few catchphrases that are used in order to capture people's attention, one of them being "GMOs". As stated by definition,' Genetically Modified Organism (GMO) is a life form, such as a plant, animal or bacteria, that has been genetically modified(GM) or genetically engineered(GE) by forcefully inserting genes from other species into its DNA'. What is not known is that only one or a few new genes with a known function are introduced into a crop and at times the new genes come from an unrelated species. For decades agricultural scientists have used radiation and chemicals to induce gene mutations in edible crops in attempts to achieve desired characteristics.

Due to environmental changes, the farming industry has been affected the most thus the need for human intervention in order to improve the quality of fruit and vegetables and to assist the farmers in the drought seasons. The most common genetic modifications are designed to create higher-yield crops, consistent products and resistance to pesticides and fertilizers. There is continuous testing carried out on plant engineering to produce extra nutrients such as beta-carotene; different product qualities such as delayed ripening of fruit; produce more starch; resist particular diseases; have less lignin so trees can be more easily processed for paper, and flowers with a rare colour extended shelf life and ensure high yields despite the drought of floods. Essentially GMO food is made to look better, last longer and always be available. An example is GM salmon where it is engineered to grow larger and faster than is natural, and micro-organisms such as insulin, fuels, a variety of vaccines, growth hormones, and enzymes are used to process foods. In South Africa, only three commercial crops have been genetically modified which are maize, cotton and soya. New crops undergoing experimental trials in South Africa include banana, cassava, sorghum and sugar cane. South Africa imports certain types of GMOs, including GM rice, known as Liberty Link, and several types of GM Canola for food and animal feed only. South Africa has approved the use of rBST – a GM hormone injected into cows to increase their milk production. In the USA GMO foods are regulated by the Food and Drug Administration to ensure that the requirements meet the same safety requirements as traditional foods It is not possible to prove that certain foods are safe, only to say that no hazard has been shown to exist.

There are advantages and disadvantages to GMO crops, taking into account their potential effects on human health and the environment.GMO foods contribute to lower costs for the consumer, an increase in the amount of quality food available for the growing population and the sustainability of the farming industry. The generic modification increases nutritional value and enhances the flavour thus making it a more attractive product meaning higher yields for farmers. However, there is a range of drawbacks that people often associate with GMO foods. Research is ongoing, the evidence varies each time and the main health issues are debated.GMO crops have been genetically engineered to withstand weed killers and herbicides that contain the active ingredient glyphosate – a product that kills all plants that have not been modified. Glyphosate is a carcinogen, which means that it can cause cancer. It has been tested that residue of glyphosate stays on the crops and makes its way into food. Most GM foods contain "antibiotic resistance" markers. These markers help the producers to identify whether genetic material has been transferred. Overexposure to these elements could render life-saving antibiotics not ineffective. When the transfer of genes from an allergenic organism to a non-

allergenic organism occurs it can increase the risk of the new organism causing allergic reactions. If a consumer is unaware that they are consuming foods that contain allergens, which could cause severe allergies of which could be life-threatening. A concern has been raised that genetically modified DNA could be unstable causing DNA damage to the crop and to the person consuming it. Mutations in the DNA is known to cause cancer and other diseases, thus if they are consumed over a long period could cause Chronic diseases. There is a concern that GMO crops have led to an increase in weed-killing herbicides, and the herbicides are building a resistance to the chemicals. If there is an increase in the chemicals it could have an impact on the entire ecosystem. The research on the safety of GMO'S is inconclusive. There are no media supporting the use of GMO's or campaigning for their complete ban.

The majority of the scientists are saying that GMOs are considered safe, but only one-third of consumers share that view. more than half of the American population know very little about GMO foods. Knowledge and appreciation of science are critical for our future. The kind of information people needs to know because the progress of science is never-ending and getting more complex. We have entered into a new decade where a lot of changes are expected to happen, the 4th Industrial revolution, what will that bring?