Genetically Modified Crops: Revolutionary Grains of Hope

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In many of the farms around the world, there is a treasure buried in the soil- a solution to many of the problems of the world, problems like hunger and damage to the environment caused by chemical emissions. There are over 17 million farmers around the world that plant genetically modified crops (EuropaBio 2015). These farmers that plant genetically modified crops are taking the steps that will help reduce the severity of world hunger and will reduce the damage being done to the environment. By planting genetically modified crops, there is a reduction in the use of chemicals in farming, a reduction in the emission of greenhouse gases, and increased yield and profit. Despite these benefits that come as a result of planting genetically modified crops, there are some people who do not agree with the idea of genetically modified crops, pointing out the impact the crops have on the soil, the impact on non-target organisms, and the increase in toxin and allergen levels. However, the overwhelming majority of the research conducted on this matter shows that the benefits of genetically modified crops outweigh the shortcomings that the crops may have.

One of the positive effects that genetically modified crops have on the environment is the reduction of chemicals in the environment as a result of planting these crops. According to an analytical report conducted on the environmental impact of genetically modified crops, it was found that farmers that planted genetically modified crops used less insecticide, resulting in less damage to the environment (Brookes and Barfoot 2013). In a meta-analysis that collected multiple data points on the use of chemicals being sprayed on farms, it was found that the use of genetically modified crops reduced chemical pesticide use by about 37% (Klumper and Qaim 2014). This is not an insignificant reduction by any means; rather it is a large reduction in chemical use that will have a profound, positive impact on earth and its inhabitants. In Brooke's and Barfoot's (2013) analytical report, it was found that since the genetically modified crops are

herbicide-tolerant, farmers started using a low-cost herbicide that is less harmful to the environment. This means that a less extreme, powerful herbicide was used to spray the crops. Since a less powerful herbicide is used to spray the crops, there is a reduction in the amount of chemicals floating around after the crops have been sprayed. Just this aspect alone creates a significant change in the health of the environment- fewer chemicals floating around means fewer chemicals that people inhale on this earth. Research has been conducted, studies have been made, and reports have been written; the evidence is clear: the use of genetically modified crops leads to the reduction of the use of chemicals in farming, resulting in a direct positive impact on the environment.

Another positive impact that genetically modified crops have on the environment is that they reduce the emission of greenhouse gases. Most people understand that it is important to reduce the amount of greenhouse gases emitted. Over time, civilization has come up with methods of reducing the amount of greenhouse gases emitted. People have spent countless hours and many resources making vehicles more efficient, even creating vehicles that are completely electric. The phrase "Reduce, Reuse, and Recycle" has become instilled in the mind of every person. The systems that are a major part of homes and buildings like heating and cooling have been made more efficient, using less energy. While all of these are great examples of how civilization has successfully reduced the carbon footprint, many people do not realize that there is a rather simple way to reduce the emission of greenhouse gases. By planting genetically modified crops, there is a significant reduction in the amount of greenhouse gases emitted. This is due to the fact that since genetically modified crops do not need as much maintenance as regular crops, farmers are not wasting as much fuel to power their equipment, resulting in a reduction of greenhouse gases emitted (Prairie Farmer 2014). This reduction of greenhouse gases

emitted is not a minor reduction. The reduction of these greenhouse gas emissions in 2012 was equivalent to "removing 27 billion kg of carbon dioxide from the atmosphere or equal to removing 11.9 million cars from the road for one year" (Batra 2014). The simple yet effective implementation of genetically modified crops in farming leads farmers to expend less fuel as a result of not needing to ride on farm equipment as long, leading to a reduction of the carbon footprint that is left behind.

Another major benefit of genetically modified crops is that they increase yield and profit. By planting genetically modified crops, farmers see an increase of profit of $117 per hectare (Batra 2014). The GM crops bring in higher net returns since these crops need less managing, allowing the farmers to focus their time and energy on other things (Fernandez et al. 2014). This in turn helps the economy, since farmers are making more of a profit selling more crops. Also, since the farmers are using a lesser amount of chemicals to spray the crops, they are saving money by not needing to buy as many chemicals (Areal et al. 2013). The implementation of GM crops in farms brings increased crop yield and profit, and in turn, helps the economy.

Aside from boosting the economy, GM crops can help alleviate the issue of hunger in the world. The population of the earth is ever increasing, and the food sources cannot keep up with the demand. Genetically modified crops are the solution to this issue. Think of the possibilities that genetically modified crops can bring: planting these crops in underdeveloped countries in the long term can slowly bring an end to world hunger, food can be sent generously without worry of there being enough, and starvation can be prevented. Think of all the children that die every year around the world due to malnutrition. These crops can be the lifesaver of people all over, providing them with additional nutrients that would not be attained from traditional crops. These grains of hope are what the world needs- these crops can be the difference between life

and death for some people in the world. Genetically modified crops benefit both the producer and the consumer, bringing profit that will help the economy and bringing food to the hungry.

Despite the fact that genetically modified crops can benefit civilization and the environment, there are those who are opposed to these crops. The opposition comes from claims that genetically modified crops have a negative impact on the soil and on non-target organisms, and that they increase toxin and allergen levels. In a meta-analysis that collected evidence on GM crops and their effect on the environment, it was found that these claims did not have enough evidence to be supported (Areal et al. 2013). While in one study it might have been found that these claims are true, there are more studies that show the benefits of genetically modified crops than studies that prove that there are shortcomings to GM crops (Canforaa et al. 2014). There is not enough evidence to support the claims made by those who oppose GM crops, and the amount of research showing that GM crops bring more good than harm outnumbers the research that says the opposite.

What is seen when looking at the research and studies done on genetically modified crops is that there is a reduction in the use of chemicals in farming, a reduction in the emission of greenhouse gases, and increased yield and profit. These benefits are fully supported by multiple studies and research conducted in the past. These benefits of GM crops can provide the world with more food, more money, and less damage to the environment. Furthermore, the use of GM crops can lead to the end of world hunger and can sustain the growing population. By supporting the implementation of GM crops in farms around the world, food can be provided for the hungry, the damage being done to the environment can be reduced, and the economy can be strengthened. In order for these benefits and changes to occur, genetically modified crops must be allowed all over the world. If these crops remain controversial and banned in certain parts of

the world, the positive impact that the crops can bring will never be felt. Civilization must continue moving forward, and genetically modified crops are the next step to the future.

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