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GMOs negative effects

Genetically modified organisms (GMOs) have become a ubiquitous presence in agriculture worldwide, with their usage steadily increasing. In 2019, GMO production or importation extended to as many as 70 countries ("GMO Answers"). The benefits of GMOs are not limited to their low production costs or reduced pesticide usage. GMOs are, in fact, viewed as promising solutions to address global food supply challenges, including those posed by climate change and global warming. Nonetheless, GMOs can also have negative consequences on the environment and human beings. Therefore, the pervasive adoption of genetically modified organisms (GMOs) in modern agriculture has sparked concerns about their detrimental impacts on both the environment and human health, highlighting the urgent need to address and mitigate these negative consequences.

It has been more than four decades since the first successful attempt at 'genetic engineering' (Science and History of), which opened the door to experiments on GMOs. Later, numerous laws and regulations were enacted before the first 'GMO tomato' (Science and History of) became available for sale in 1994. Subsequently, additional regulations and guidelines were developed to control the production process of GMOs. Building on the historical development and regulation of GMOs, it is noteworthy that there are currently no strong efforts in place to investigate the magnitude of the negative consequences associated with GMOs.

First of all, GMOs can be harmful to human health. For instance, some people have reported suffering from allergic reactions after consuming GMO products, indicating the possibility of a causal association between the new genetic modifications introduced by GMOs and these allergic reactions. In other words, the new DNA fragments implanted in GMOs generally code for new or edited proteins with specific functions, and 'consumer exposure to these novel or processed proteins could potentially lead to new food allergies' (Verhoeckx, Kitty, et al. 1). Additionally, consuming GMOs can complicate the treatment pathway for diseases caused by pathogens that reside in humans’ microbiome. The customized DNA fragments inside GMOs, which 'code for antibiotic resistance' (Rosa and Alonso-Calleja 40), may be transferred to bacteria living in the human microbiome, potentially complicating the treatment of diseases caused by those bacteria. Lastly, the consumption of GMOs can negatively impact the digestive system, as GMOs can disrupt intestinal microflora, resulting in intestinal disorders. Therefore, the research community must prioritize investigating the potential adverse consequences of GMOs on people's health.

Another negative impact of GMOs concerns ecosystems. First, GMO plants that are engineered to tolerate certain types of pesticides have led to an increase in pesticide usage due to the emergence of superweeds and super insects capable of resisting the pesticides. Consequently, habitats become contaminated with high doses of pesticides that may be harmful or lethal to various forms of life. Moreover, GMO plants designed to tolerate pesticides are harmful to biodiversity. Those plants unable to tolerate pesticides are at risk of disappearing, leading to a decrease in food resources for several animals. Finally, the customized DNA of GMOs can be transmitted. During the consumption of GMO products or their reproduction, the altered part of their DNA can be passed to other plants or animals, potentially resulting in harmful consequences since the process is not controlled. Therefore, it is only fair to assert that GMO usage should be strictly monitored to preserve ecosystems.

However, it is only fair to state that GMOs have positive consequences. First, GMOs are engineered to tolerate several agricultural and environmental-related factors, leading to a decrease in production costs. For example, GMO plants that can resist certain harmful insects do not require the use of insecticides, which directly reduces production costs and sale prices. Additionally, some GMO plants are modified to thrive in harsh environmental conditions. For instance, certain GMO wheat varieties have been adjusted to grow in arid climates, proving advantageous for countries with such climates. Furthermore, GMOs are often more nutritious. They are customized to have higher nutritional value in terms of specific nutrients that can be healthier for organisms consuming these products. Thus, the positive consequences of GMOs must be considered as motivation to find solutions for their negative consequences.

All in all, GMOs can have negative consequences on human health and ecosystems. They can cause allergic reactions, complicate treatment pathways, and lead to harmful intestinal disorders. Additionally, they can contaminate ecosystems, reduce biodiversity, and potentially result in unwanted outcomes through uncontrolled DNA transmission. On the other hand, GMOs also have significant positive effects that should motivate further efforts to control the negative consequences.

Works cited

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