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Mexico, Nutrition

GMO corn in Mexico

Nutrition is the building block of the human body; without proper nutrition, quality of life, productivity, and everything in between is drastically reduced. Not only is food an important part of survival, but it also serves as a vehicle for building relationships, generating income, and spending time with friends and family. Food is not only an essential part of everyday life, it serves as the foundation for many holidays, celebrations, and get-togethers. Affordable food is really important, and as efficient as food production has gotten over the past decades, many of the methods that farmers use to produce the food, fiber, and fuel for our world face scrutiny and are often under threat by overzealous governments and activists. Recently, we have seen a push in Mexico to attempt to restrict the use of genetically modified corn, which could be detrimental not only to the country of Mexico but to the world as a whole.

Mexico is a country located in North America. It has approximately 131.9 million people (Worldometer), with the majority of those individuals, 12 million of them, living in Mexico City. Approximately 88% of Mexico's population lives within the major cities, whereas only about 12% live in rural areas. The average age in Mexico is about 30 years old, and the central and southern regions of Mexico are significantly more populous than the northern regions, likely due to the climate factors of the aridness of the northern area of Mexico. Mexico is deeply rooted in strong cultural values and affection for heritage. Thus, the family structure is very traditional. Mexican families are often connected differently than the traditional American family structure. In Mexico, those living in a household often include extended family. Thus, grandparents, aunts, uncles, and other family members regularly play a crucial role in daily life. Mexican families also tend to hold a high respect for authority figures and elder members of the family. The predominant religion in Mexico is Catholicism, and thus family values are heavily influenced by religious events in their daily life. Many of the jobs in Mexico are in the service and labor sector, with the majority doing hard or traditional labor. The average monthly income in Mexico is approximately 1,695 US dollars. Mexico is a culturally rich country, but it does have significant economic disparities, with the rich being significantly richer and the poor significantly poorer. The United States is one of the main sources of agricultural commodities for the country of Mexico. Mexico also serves as a major source of export demand for United States farmers; last year alone, Mexico purchased nearly 23.4 million metric tons of United States-grown corn (grains.com).

Recently, in Mexico, there has been a push to attempt to ban genetically modified organism (known as "GMO") products. Genetically modified crops are those that have used science to implant traits into the seeds so that the crops have more desirable characteristics. This specifically affects United States corn imports to Mexico. This presents an issue not only for the Mexican people and Mexican farmers but also for farmers on an international stage. An important thing to understand when considering genetically modified crops is the way that they increase the efficiency of production for most farmers. Being able to use pesticides and other forms of crop protection allows the producer to achieve higher yields. The average yield for corn in the United States in 1970 was 71.7 bushels per acre (Associated Press), compared to last year's nearly 179 bushels per acre (USDA). This significant growth can be mostly attributed to the major improvement in genetic technology. Advancements in genetic trait technology, whether used to help protect corn from drought, insects, or chemical use, have increased the ability of producers to grow crops. Having the ability to fight weed pressure efficiently and effectively is critical to a farmer's ability to meet the demands of the food industry. The simple laws of supply and demand dictate that the more supply of a product that there is, the better off the consumer is likely to be, because more

supply usually lowers the price (assuming that demand remains constant). Another benefit of GMO corn production that is not often realized is carbon sequestration. In the United States, farmers can get a tax credit for carbon sequestration and corn production, which makes corn production even more economical. This combination of a wide array of different benefits makes GMO corn both beneficial and economical. Not only is this corn fed to livestock, but it can also be made into products like chips, tortillas, and other food products for consumer purchase. The issue with genetically modified crops is not as much about the crop itself but how the product has been portrayed by those who are against genetic modification. Detractors of GMO corn often do not understand what genetically modified means and thus, they are fearful of the GMO products without reason. This is unfortunate for the poorest Mexicans. If the United States cannot export GMO crops to Mexico, the cost of feeding livestock and producing traditional Mexican staples such as flour and cornmeal will be higher. Many of the poorest Mexican citizens already struggle to afford necessities, and thus, it is extremely important that food prices be kept as low as possible. Needlessly banning perfectly safe products does nothing but put a burden on struggling working-class people. It will require that they go without or that they work harder to have the money to pay for food that they would have been able to buy more cheaply if it was made with GMO corn.

The easiest solution is to allow the continued sale of GMO products in Mexico. These traits are not toxic but simply mean that the farmer produces a higher-yielding, more resilient crop. However, before we address the solution, we must look at the reasons why Mexico has decided that this is a necessary step. The main reason behind the attempt to no longer import or grow GMO corn was the goal of protecting the germplasm of the traditional corn seed (CGTN). Mexico, the original home of corn, has a culture deeply rooted around corn, and thus it is a very important grain for them. Approximately 94% of the corn produced and exported by the United States to Mexico is genetically modified, which is concerning to those who feel it is important to protect the integrity of the original strain of corn DNA. No one disputes that it is very important to find ways to protect the original DNA of corn. Studies have shown that the native corn from Mexico is at a higher risk of contamination and dilution with the hybrid technology. Thus, the protection of the original corn germplasm is important not only for its use in science but also for the cultural significance of such an important crop to all of the Mexican people. Thus, while Mexico must continue to sell, grow, and purchase genetically modified corn, the agricultural community does need to continue working on solutions to help protect the original DNA. One possible solution to protecting the germplasm is to keep growing it in secluded areas, whether that means fields with proper buffering from genetically modified crops or building greenhouses that are specifically designed to grow this corn and keep it isolated from outside contamination. This would be similar to the way that American seed companies grow some of their more protected hybrids and seed varieties. It is designed with the goal of both preventing contamination from other hybrids and ensuring that the seed is exactly what the company desires.

When considering the issue of genetically modified corn, it is important to understand why genetically modified crops help to reduce food prices. For one, the GMO process helps make these products significantly harder. GMO crops are less susceptible to all sorts of different weather conditions. They can better withstand drought, abnormal rain, and, ideally, significant wind. For example, one trait that has been introduced is the BT trait. The BT trait is important in helping to limit the effects of corn worm on a growing corn plant. A corn worm can be exceptionally detrimental to a crop (Texas A&M). Thus, the BT trait is extremely important to protect not only the corn seed but also the plant as it continues to grow. However, one of the critical components of this basic trait is that it is not designed to kill all worms. While this might seem counterintuitive, if it killed all of the worms, that could potentially cause trait resistance, which would be the bigger deal and result in the need for more genetic modification. Thus, this trait allows for a small number of worms to continue to exist and repopulate, thus preventing the beetles that eat corn plants from becoming resistant to the trait. Another extremely important genetically modified

trait is the implementation of drought tolerance. The drought tolerance trait provides an amazing opportunity to protect crops when limited water resources are available. This trait does not reduce the yield ceiling during a good year, but it significantly raises the floor during a drought year. These traits work by ensuring that the plant gets the most use out of each droplet of water that it intakes, making sure to protect yield and the plant during times of water stress. Another example of a really important trait is the incorporation of herbicide tolerance. Herbicide tolerance is a trait that has been used in many plants throughout the years to make weed control and crop protection strategies significantly easier. Prior to the invention of herbicide and herbicide-tolerant crops the primary way to reduce weed pressure in a field was the use of a row crop cultivator. While cultivators are an effective form of weed prevention, they do come with an increased need for labor, fuel, and time. Running a tractor and cultivator up and down the field numerous times throughout a growing season, not only requires significantly more fuel than one or two passes with a really wide sprayer, but it also presents the opportunity for more crop loss due to the cultivator sweeps coming in contact with the soil and results in more soil compaction. Both of these things have the potential to decrease yields. Having that much contact with mechanical equipment simply places undue stress on the crop.

Mexico currently has a ban on the planting of genetically modified corn. Further, although Mexico had made the decision to ban the importation of genetically modified crops, Mexico did repeal this trade decision. However, this still does not mean that there won't be tension between the United States and Mexico over GMO crops. The move to ban the planting of genetically modified or engineered corn seed does signify a willingness by the Mexican government to place further restrictions on the use and potential importation of genetically modified corn which could be harmful to United States farmers, Mexican farmers, and the people of Mexico.

At the end of the day, the Mexican people would not starve without the ability to use genetically modified crops, but removing the use of the crops will cause the cost of food to rise noticeably across Mexico and place undue stress on the people of the country, especially rural Mexico. Thus, it is extremely important that Mexican president Claudia Sheinbaum keep allowing the importation of genetically modified corn.

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