Eleonora Escalante Strategy

Corporate Strategy
Integral Value Creation

Risks and Benefits of GMOs in Agriculture and Health

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Risks and Benefits of GMOs at Human´s Health level

Risks	Benefits
There are risks associated with the use of agricultural biotechnology. THese are have focused particularly in the usage of GM crops for human health. Some of the health risks pertinent to unapproved GMFs include antibiotic resistance, aller-genicity, nutritional changes and the formation of toxins. There are scientific evidence of certain allergies linked to the consumption of GMFood: Examples: The foodborne diseases such as soya allergies have increased over the past 10 years in USA and UK and an epidemic of Morgellons disease in the US. There are also reports on hundreds of villagers and cotton handlers who developed skin allergy in India. Recent studies have revealed that Bacillus thuringiensis corn expresses an allergenic protein which alters overall immunological reactions in the body. *Celiac Disease seems to be linked to the consumption of GMWheat.*	*In general, the majority of the Biotech-crops available on the global market have been genetically manipulated to express one of these basic traits: resistance to insects or viruses, tolerance to certain herbicides and nutritionally enhanced quality.*

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Risks and Benefits of GMOs at the Health Sector explained with examples

Risks	Benefits
It is possible that the cause of possible evolution of insecticide-resistant "superbugs" is associated to GMOs. In addition, with the introduction of GM mosquitoes into the wild, eventhough they could reduce the transmission of the malaria parasite. There are other potential risks associated with the genetic mutation of the insects.	*Genetic modification of insects has become an important area of research, especially in the struggle to prevent parasitic diseases. For example, GM mosquitoes have been developed that express a small protein called SM1, which blocks entry of the malaria parasite, Plasmodium, into the mosquito's gut. This results in the disruption of the parasite's life cycle and renders the mosquito malaria-resistant.*
The release of GM mosquitoes seems to be related to the new mutations of sicknesses. In Central America, dengue was the only mosquito sickness for centuries. Suddenly as of 2017, other sicknesse such as ZIKA or Chicungunya started to appear. The use of the GE insects in field trials or for the purposes of control of disease vectors qualifies as an emerging risk.	*Released males GE OX513A (A genetically modified Aedes Egypti mosquito) were expected to out compete the wild males to mate successfully with their female wild-type counterpart. THe idea was to kill the mosquitoes when they reproduced. Of the resulting progeny, 96% were not expected to survive, and cause a decrease of the Aedes-transmitted arbovirus in humans. In theory this did not stop here. 4% of the progeny survived, and have mutated to new mosquitos which are spreading other sicknesses.*
GM plants that produce "edible vaccines" are under development. An edible vaccine is an antigenic protein that is produced in the consumable parts of a plant (e.g., fruit) and absorbed into the bloodstream when the parts are eaten. But as much as fruits or vegetables can be used as edible vaccines, they can be used as edible poison too.	*Novel DNA vaccines may be useful in the struggle to prevent diseases that have proved resistant to traditional vaccination approaches, including HIV/AIDS, tuberculosis, and cancer.*
The use of these pharmaceuticals are associated with other side effects, and the emergence of new sicknesses or even heart attacks. Each medicine has side effects.	*GM microbes, plants, and animals have been used in the production of complex pharmaceuticals by enabling the generation of safer and cheaper vaccines and therapeutics.*
Many people worry that current gene therapy approaches may one day be applied to produce "designer" children or to lengthen the natural human life span.	*Gene therapy is becoming a treatment option for diseases ranging from rare metabolic disorders to cancer.*

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Risks and Benefits of GMOs at the Agriculture

Risks	Benefits
Genetic manipulation may potentially alter the allergenic properties of crops. *The consumers are mainly concerned about the long term human health effects of the bio-tech crops such as antibiotic resistance, aller-genicity, unnatural nutritional changes and toxicity.*	*Engineered crops can dramatically increase per area crop yields and, in some cases, reduce the use of chemical insecticides.* *For example, the application of wide-spectrum insecticides declined in many areas growing plants, such as potatoes, cotton, and corn, that were endowed with a gene from the bacterium Bacillus thuringiensis, which produces a natural insecticide called Bt toxin.*
When it comes to enrich grains, the promise of improved health benefits is still unclear: the accumulating evidence over 20 years of GMF introduction to the market does not fully support its initial benefits	*The initial idea of developing nutrient-fortified staple GM food, started as a promising solution to malnutrition and food shortage*
There is a possible spread of engineered crop genes to native flora which can be altered by pollinators, water and air. Fauna can be also affected, the benefits of the yield augmentation of crops may erode as populations of secondary insect pests, may increase.	*It is excessively stated over the media and through their dependent scientific publications that GM crops containing genes expressing herbicide tolerance and pest resistance lead to reduction of broad spectrum pesticides and herbicide use.*
Currently, for many years it has been a wide practice to use herbicides as the glyphosate. But the Glyphosate is toxic. Currently, Bayer which bought Monsanto, faces about 18,400 lawsuits against its new subsidiary Monsanto over its glyphosate-based weedkiller called "Roundup" in the United States.	*GM plants were engineered for resistance to a spec,ific chemical herbicide, rather than resistance to a natural predator or pest. Herbicide-resistant crops (HRC) have been available since the mid-1980s; these crops enable effective chemical control of weeds, since only the HRC plants can survive in fields treated with the corresponding herbicide as the glyphosate.*

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Risks and Benefits of GMOs at the Agriculture and Health Sectors

The references utilized to prepare these comparative analysis tables are:

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Thank you for reading to me.

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