World Food Programme

Implementation and development of Biotech-labels and GMOs in ensuring Food Security by 2030

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INTRODUCTION

Since the creation of the United Nations, the General Assembly has established a number of programmes to address several humanitarian and development concerns. The World Food Programme (WFP) is a humanitarian organization that assists an average of 80 million people in 76 countries around the world (World Food Programme, 2018). Established in 1961, it provides assistance in emergencies and works for the improvement of nutrition (World Food Programme, 2018). Its efforts are directed to eradicate hunger and malnutrition, supporting food security and nutrition to rebuild livelihoods in countries of emergency.

Food security had been a discussed topic in the past years. The concept has evolve in the last thirty years. The term first originated in the mid-1970s was related to assuring the availability and stability of basic foodstuff. (FAO, 2006). Through the years, this definition had been changing due to various risk factors that have emerged. Food Security not only involves food supply, availability and price stability, but also addresses food insecurity associated with poverty and low income caused by natural disasters, economic collapse or conflict (FAO, 2006). As a response, the United Nations adopted the Millennium Development Goals, which established to eliminate hunger by 2030 (World Food Programme, 2018). In order to achieve this ultimate goal, many techniques to ensure global food security have emerged.

Science, technology and innovation had develop an important role in ensuring food security by 2030. An example is biotechnology, especifically genetically modified (GM) crops or commonly known as GMOs. This crops are created by transferring genetic material from one organism into another, allowing the crops to withstand treatments with herbicides (The case for, 2015). This alterations have improvements for food supply such as better crop harvest, food safety, nutritive value, increase food supply, therefore they contribute to Food security (Biotechnology, Genetic Engineering, n.d). In 2016, the National Academies reported that 12 crops developed with genetic engineering techniques were available in the market. (Biotechnology, Genetic Engineering, n.d) This biotechnology allow for the commercial availability of crops, ensuring food supply for the population and improving their livelihood.

Even though genetically modified food have its benefits, it has been a controversial topic. According to the Food and Drug Administration (FDA), health effects may be caused by modified foods. This leads to the controversy of Biotech-labels, as an insurance to indicate the GMO ingredients on products. Labeling policies deliver information to consumers on characteristics of products and be aware of their consumption, which without proper labeling is difficult for the consumer to judge the safety of GMO crops (Caswell, 2000). Australia, Japan, New Zealand are among at least 60 countries that require some labeling on GMO foods. (The case for, 2015). This creates a controversy for mandatory Biotech-labeling for the insurance of health and food security.

Even though technology has been beneficial in the improvement of different aspects, in this case to eradicate hunger and malnutrition, it has caused controversy regarding the uses that are given. Genetic modified crops may help to meet the world´s increasing food supply needs by 2030, however the controversy arises as if it is worth the risk of modifying food in order to ensure food security and achieve zero hunger. The discussion increases as GMOs may cause food insecurity, affecting on the populations health instead of ensuring food security.

HISTORY OF THE PROBLEM

Over the past decades, the number of food emergencies has risen exponentially. According to the World Food Summit (1996), food security is defined as the access, availability, food use and stability. Regrettably, millions of people do not enjoy Food Security due to natural disaster, economic collapse or armed conflicts (FAO, 2006), becoming a wake up call for different Associations and Programmes to take action regarding food security..

The State of Food Security in the World is alarming and threatening. According to the Food and Agriculture Organization. (FAO), about 850 million people are undernourished or in total hunger. The Un member states agreed to achieve the United Nations Millennium Development Goals by the year 2030. The members commit to combat several problems that threatened the livelihood of the population, including poverty and hunger (MDGs, 2018). As a response, nations have decided to implement on innovation in order to ensure Food Security by the year 2030.

Nowadays, technology and innovation are useful for the improvement of food production and supply. Biotechnology, genetic modification methods are techniques that have shown potential to meet world´s increase for food supply in a more efficient, economical and sustainable way (Biotechnology, Genetic Engineering, n.d). The history of genetic modification engineering began in the 1970s as a technique for the improvement in plant tissue by transferring genetic material from one organism into another to create specific traits (The case for, 2015). This alterations have improvements for food supply such as better crop harvest, food safety, nutritive value, increase food supply (Biotechnology, Genetic Engineering, n.d). In 2016, the National Academies reported that 12 crops developed with genetic engineering techniques were available in the market. (Biotechnology, Genetic Engineering, n.d) This biotechnology allow for the commercial availability of crops, ensuring food supply for the population and improving their livelihood.

Furthermore the benefits of GMOs, it is a controversial topic around the world. The transfer of genes between food may impact on nutritive and other composition, toxicity, and allergenicity. In regards to the environment, effects on non-target organisms, invasiveness or weediness (Biotechnology, Genetic Engineering, n.d). The risk is higher as unfortunately people do not know what they are consuming. Governments have implemented Biotech labeling and labeling policies, as an insurance to indicate the GMOs in daily products. Labeling policies deliver information to consumers on characteristics of products and be aware of their consumption, which without proper labeling is difficult for the consumer to judge the safety of GMO crops (Caswell, 2000). Australia, Japan, New Zealand are among at least 60 countries that require some labeling on GMO foods. (The case for, 2015). Although some countries use Biotech labels, others have different postures. Mandatory labeling is required if more than 1% of an ingredient in a product is GM, according to the European Commission. In the other hand, some countries only demand labeling if selected products include important modified ingredients, this is the case of Japan (Caswell, 2000). This leads to discrepancy between countries on whether GMO labeling should be implemented or not in different food products.

Even though several countries have started to implement this techniques, social and ethical concerns have risen, criticizing and opposing genetic engineering. This creates doubts on the implementation of this technologies for the achievement of Food Security by 2030. GMOs and Biotech labels is a topic that has to be well defined in order to understand if it worth the risk and consequences to achieve Zero hunger at the expense of the health of millions of people.

CURRENT SITUATION

The assurance of labelling genetically modified food has been an important point of discussion world wide. The U.S. Department of Agriculture is leaving itself some wiggle room for how it defines exactly what a genetically modified food is as it seeks comments on its proposed rule for bioengineered food labels. A Federal law established in 2016 is requiring a disclosure on bioengineered foods on packages in places where they "could be found without much effort." It's also requiring GMO identification on foods that mainly consist of crops that are predominantly planted in biotech varieties in the U.S., including canola, field corn, soybeans and sugar beets. Some options are allowing the considering whether highly processed foods that may have lost their GMO content, such as high-fructose corn syrup, should be exempt. The agency is also deciding how much GMO a food must contain before it requires labeling, whether it should be more than 0.9 percent or 5 percent of the product's weight. (Bjerga, A. 2018)

As Congress returns to Washington, D.C. following Spring recess, the debate over GMO food labeling continues. Senate leaders insist that the issue is a priority that should be rectified with a GMO food labeling system implemented at the national level to avoid the cost and confusion associated with a state-by-state patchwork of differing laws. In the USA itself, with a high adoption of GM crops, more than 95% of food-producing animals consume GM feed. During the last decade alone, this corresponded to more than 100 billion animals. Health and performance of these animals is closely monitored. With the passing and implementation of the updated Food Safety Law in October 2015, China will probably be clustered on the stricter side of GMO labeling. The new law in China specifically includes an article on GM food that requires mandatory GMO labeling. Those who violate the labeling requirements will be punished with fines or even suspension of their license. However, specific rules on how to label GMOs with regard to the font size and other detailed requirements have still not been announced. China is also well aware of the variances in other countries on GMO labeling: The U.S. represents countries requiring only voluntary labeling; most European countries require mandatory labeling once the GMOs exceed a certain threshold in a product; Japan requires mandatory labeling only on certain processed foods. (Wang, W. 2016).

For soybean, the share of this market has been estimated to be less than 4.5%, for maize at around 7% of traded commodities. Given the wide adoption of GM varieties in main export countries, more than 90% of the globally traded soybean may contain GM. For the European Union (EU), less than 15% of the about 30 million tons of soybeans and soy products for feed imported each year (more than 60 kg per EU citizen) are identity-preserved certified GM free. The large majority of soy-based animal feed in the EU, thus, contains genetically modified components. Spain is the only European country with significant plantings of this GM crop.Even in European countries without current GM crop cultivation, attitudes of farmers towards the potential of crops improved by biotechnology tend to be quite positive. In a survey, over a half of German farmers and almost a half of Czech and UK farmers indicated that they would be keen on adopting GM herbicide tolerant oilseed rape, which would facilitate weed management. Over a third of Spanish, French, and Hungarian farmers would be interested in adopting GM herbicide tolerant maize . In another study, one half or more of surveyed UK farmers indicated that they would consider growing GM maize, oilseed rape, or sugar beet, if they were licensed by the government . (Lucht, 2015).

Twenty-eight of the world's nations requiring GMO labeling are found within the European Union, which has long held a somewhat hostile view of genetic modification of foods and despite its importation each year of more than 30 million tons of biotech corn and soybeans used for animal feed. The EU countries and other countries that have developed a regulatory structure based on how a product is made (the process) and not the final product. The EU considers a GMO to be any product of "techniques of modern biotechnology called gene technology." That differs substantially from non-labeling nations, where regulators use what's called a product-based evaluation, requiring labels only if there is a significant nutritional or compositional difference. So if a GMO soybean is essentially identical to a non-GMO soybean, it receives no special treatment. Australia's policy argues that there is no way to tell the difference between sugar derived from a GMO crop or a non-GMO crop. But the European Union, with its traceability and labeling regulations does require labeling of these highly-refined substances, based on an April 2014 amendment. (How are GMOs labeled around the world? 2016).

UN ACTIONS

As trading of gmo's is increasing worldwide, and technology is constantly growing in every concept of society, safety and awareness has also been needed to increase. The United Nations has put all its efforts to ensure the safety and proper information toward genetically modified food products. An example of this actions is that in June 2003, the European Parliament ratified a U.N. biosafety protocol regulating international trade in GM food, and in July agreed to new regulations requiring labeling and traceability, as well as an opt-out provision for individual countries. The approval of new GMOs resumed in May 2004.

In addition, European countries such as the United Kingdom, Sweden, Norway and Germany now require foods containing or produced from GMOs, or containing ingredients produced from GMOs be clearly labeled. The Codex Alimentarius Commission of the UN which is made up of the representatives of government food safety regulatory agencies from around the world, worked for two decades to come up with consensus guidance on GM food labelling. The United Nations Codex guidelines on GM food labelling are voluntary and so the guidelines themselves do not compel countries to label, in order to allow each country to decide the proper way for labelling the gmo's products.

POSSIBLE SOLUTIONS

Nowadays, science, technology and innovation are key in ensuring food security. Several techniques and procedures have been created or developed with the purpose of reducing hunger and extreme poverty such is the case of Genetically engineered (GMO) crops. The application of GMOs have cause controversy among countries on how to implement this new technology. Some nations have several laws and regulations while some are more neutral among the topic. Biotech-labeling is key on the use of GMOs, as a guidance for the population to know what they are consuming. This modifications on food have been questioned on whether they are worth the risk on ensuring food security because of the regulations that vary among countries. Organizations and programmes such as the UN and WFP tries to confront this issues to find solutions for this problems that are hunger and food security. We propose the following possible solutions:

Possible Solutions:

- Consider the appliance of legal and technical support in developing nations for the development of national biotechnology policies and strategies, such as European Parliament recent U.N. biosafety protocol regulating international trade in GM food;

- Reaffirm the neutral forum to discuss policy and technical issues related to the labelling of food products genetically modified;
- Encourage the strict and careful evaluation of each genetically modified product before its release to accomplish the objective of addressing possible concerns regarding human and environmental safety, while also supervising the correct labelling of each product;
- Reinforcement of Labeling policies such that labeling deliver the correct information to consumers on characteristics that they are not able to evaluate (use of biotechnology or genetic engineering) in order to establish an international standard to disclose certain food products or ingredients that are "bioengineered." (Labeling of Foods, 2018);
- Ensure that food security objectives are incorporated into international poverty reduction strategies, having an impact on reducing hunger and extreme poverty;
- Campaign tracking of "Non-GMO Project", which serves for food companies, retailers, and food processors to verify their Genetic Modified foods, allowing products to reach a wider customer base, and ensure customers the correct practice for GMOs, implemented by NSF International in 2016. (Product Verification, n.d)

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APPENDIX

TABLE 1.

Table of labelling laws around the world

Country	*Labelling Law*	*Labeling Threshold*
Benin	*Official ban on GE food imports and cultivation*	*0 threshold*
Serbia	*Official ban on GE food imports and cultivation*	*0 threshold*
Zambia	*Official ban on GE food imports and cultivation*	*0 threshold*
Canada	*No GE food labeling laws*	*N/A*
Mexico	*No GE food labeling laws*	*N/A*
United States	*No GE food labeling laws*	*N/A*
Australia	*Mandatory labeling of nearly all GE foods*	*0.9 – 1% GMO content*
France	*Mandatory labeling of nearly all GE foods*	*0.9 – 1% GMO content*
Germany	*Mandatory labeling of nearly all GE foods*	*0.9 – 1% GMO content*
Brazil	*Mandatory labeling of many GE foods*	*1% or higher or undefined GMO content*
China	*Mandatory labeling of many GE foods*	*1% or higher or undefined GMO content*

Japan	***Mandatory labeling of many GE foods***	***1% or higher or undefined GMO content***
Bolivia	***Mandatory labeling of some GE foods with many exceptions***	***Not defined***
Ecuador	***Mandatory labeling of some GE foods with many exceptions***	***Not defined***

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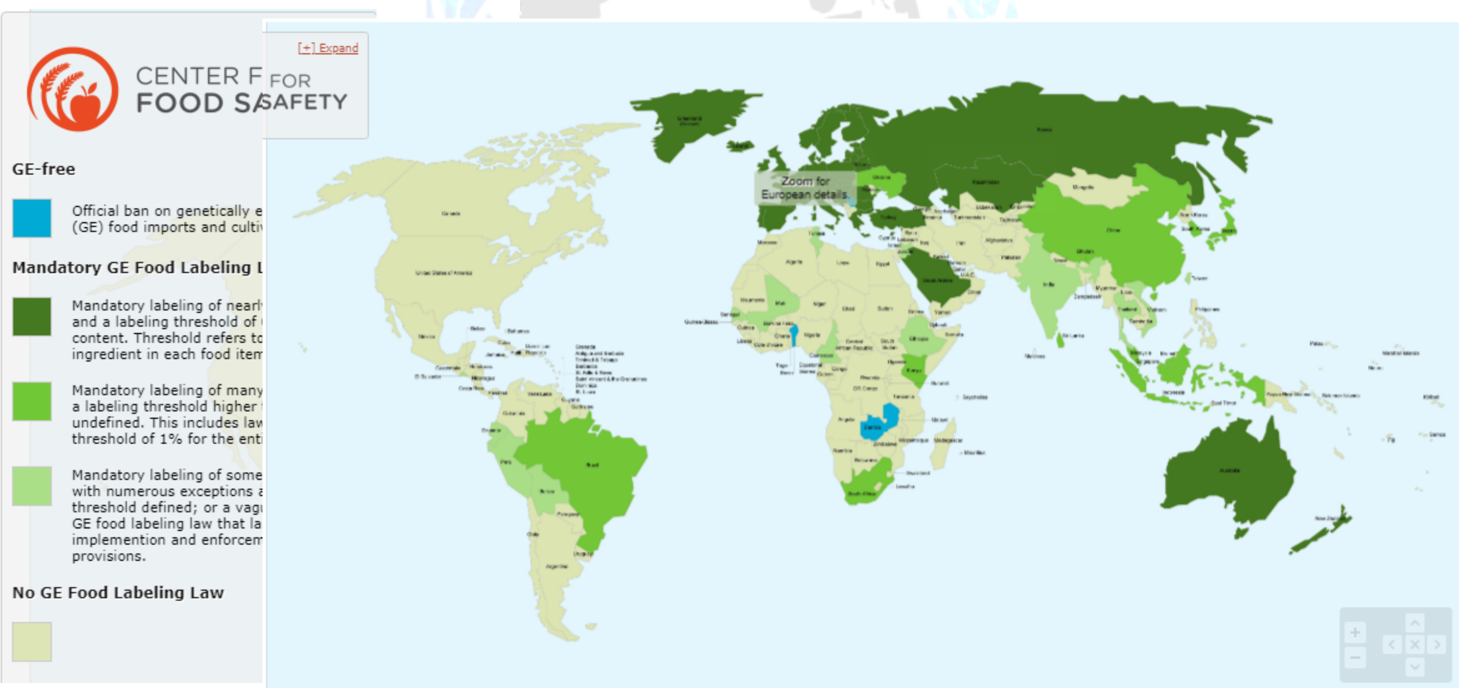
Graph 2.

Genetically Engineered Food Labeling Laws



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