GENETICALLY MODIFIED FOODS IN NIGERIA: THE MORAL AND LEGAL ASPECTS

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ABSTRACT

Genetically modified foods commonly refer to crops and plants created for human and animal consumption using the latest molecular biology techniques. The objective of the paper is to improve the seeds for higher yield, thus food sufficiency, with a view to mitigate the envisaged food shortage in this era of population explosion. However, this is not without risk against the human health. This article aims to discuss the concept of the genetically modified food and its ethical and legal imperative. The paper observed that there is still doubt on the safety of consuming genetically modified food, therefore, there is need for labelling genetically modified food so that one will only take it by choice and in case of any short or long term health hazards that may affect the consumer the producer of such genetically modified food should be responsible legally.

Keywords: Genetics, GMO, DNA, Food.

1.1 Introduction

This article seeks to examine the purpose and the legal trend for producing genetically modified foods. An inquiry would be made in order to fashion out what genetically modified foods are and by going back to the scientific research into genetics and another science which evolved there from called Genetic Engineering. Seeking to show how the principles of genetics and genetic engineering are used interrelatedly to manipulate plant and crops turning into modified products (food). Again, this research work will make and enquiry and examination of the risks, benefits, health risk and the legal imperative that could be connected to producing genetically modified food.

The problem that led to examining the purpose, nature and the legal trends of genetically modified foods stemmed from the controversies, arguments and fears of the costumers and some governments in relation to producing, buying and consuming such genetics products (foods). Whether it is safe to consume and if safe to consume, what impact does it have on the environment itself? Would there be any legal consequences arising as a result of consuming such products? Scientific research into genetics has done a great deal, by taking genes from one specie of plant to another changing the structure of the (DNA) Deoxyribonucleic Acid in the other plant, in order to produce same characteristics as the other plants.[1]

Also, there is an ethical side to the production of genetically modified food which comes from religious background and upbringing. Some advocate that food should be left in their natural

[1] Guterl, F. and Underhill, W. (2001), Europe Saps New Rules on Bio-Engineered Foods. Newsweek February 26th, p.11.

state. In that, we should be careful that is manipulating what sustains human life.[2] In the United States of America, most of the corn contains a gene transported from a bacterium that gives the corn ability to repel insects.[7] This indicates a plus for producing genetic products. But the Europeans attitude towards consuming such modified products will not be as easy as a spokesman Paul Muys for the Europe Boi-Trade Group said: ―Experience has taught us not to be over enthusiastic‖[3]

Another etymologist, John Losey, at Cornell University, indicates in his study that there is difficulty in handling any risks. He said: ―The risk is hard to get a handle on‖.[9]

Despite the fact that genetically modified foods can increase crop yields reduced costs for food and drug production, reduced need for pesticide, enhanced nutrient composition and food quality, resistance to pest and disease grater food security and medical benefits for the worlds growing population,[4] but the critics also say genetically engineered crops have the potential to cause vast damage to the environment and human health.[5] Before comprehending the nature and purpose of genetically modified foods, it is imperative to know how the principles of genetic put into practice can be used in manipulating plants and crops. Now what is genetics? Genetics means the science of heredity.[6] It involves the study of variation and heredity.

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[2] Yusuf, H. A., Food for Thought, a Lecture (Audio) delivered at the Zaitun Institute in California, in the United States, available at Kaduna Izharul-Haq 9/10 Abubakar Kigo Road.1999. [7]Guterl and Underhill, *op. cit*.

[3] *Ibid.* [9]*Ibid.*

[4] Philips, T (2008), Genetically Modified Organisms (GMOs): Transgenic Crops and Recombinant DNA Technology, http://www.nature.com/scitable/topicpage/genetically-modified-organisms-gmostransgenic-crops-and-732/, visited on 8th May, 2022 at 2:47 pm.

[5] Ibid.

[6] Brown, O. T., A Dissertation on the Legal, Moral and ethical Implication of Human Cloning and Experimentation, p. 8. (Available at Faculty of Law Library, Bayero University, Kano).2002

In other words, how characteristics of living organisms are passed from one generation to another generation.[7] According to Advanced English dictionary, the word ―genetics‖ means the branch of biology dealing with heredity and variation in organisms.[8]

Another definition from Oxford Advanced Learners American Dictionary, the word ―genetics‖ means: The scientific study of the ways in which different characteristics are passed from each generation living things to the next.[9]

The two definitions above are synonymous though the former definition defined the term as a concept in biology which relates to transfer of characteristics from one generation to another in plants and animals while the latter definition looks at it as a study of the procedure of the transfer of these characteristics from one generation to another. In any case genetics simply refers to the study of spontaneous inheritance among living things of the same species.

Therefore, it is safe to conclude that principles of genetics entail in the first instance, heredity which indicates passing of characteristics from the parents to the offspring. Secondly, variation where resemblance occurs as a result of combination of different characteristics transferred from the parent to the offspring.

[7] Ibid.

[8] http://play.google.com/store, Advanced English dictionary– offline Dictionary, retrieved 2/10/2022 at 11:35 am.

[9] http://www.oxfordlearnersdictionaries.com/definition/english/genetic/, visited on 8th April, 2022 at 11:43 pm.

1.2 Definition and History of the Concept of Genetically Modified Food

The term genetically modified foods commonly refer to crops and plants created for human and animal consumption using the latest molecular biology techniques. [10] According to WHO, genetically modified (GM) foods are foods derived from organisms whose genetic material (DNA) has been modified in a way that does not occur naturally,

e.g. through the introduction of a gene from a different organism.[11] Genetics means the science of hereditary.[18] The term genetic was proposed by William Bateson in 1906 for the science which deals with resemblance and difference found in plant and animal organisms related by descent.[12]

Historically, the first scientist to plunge into genetics experiments was Gregor John Mendel (1822-1884) considered as the father of genetics. In the years (185-64) he carried out a series of lengthy experiments concerning the inheritance of garden peas, of traits such as Hight, flowers color and seed shape. These experiments were ignored for a period of 35 years. Afterwards, research continued by other geneticists until eventually three botanists simultaneously tested their theories with that of Gregor Mendel and they, Hugo De Viries, Eric Van Tschernark and Carl Correns realized that Mendel had already discovered the principle of heredity. A lengthy period, the science of genetics was born.[13]Mendels experiment and those

[10] Daura, A. S. (2002), The Production of Genetically Modified Foods, Legal and Moral Imperative, being a Long Essay Presented to Faculty of Law, Bayero University, Kano (unpublished), p.17.

[11] www.who.int/health-topics/food-genetically-modified, (2014), Food, Genetically Modified, visited on 1st March 2022.at 11:54 am [18]Brown, *op. cit.*, p. 8.

[12] Chambers Encyclopaedia (1969), New Revised Edition London, Hazel and Watson Publishers and Viney Limited), Vol. 6, p. 198.

[13] Brown. T. A. (1998), Genetics: A Molecular Approach, Stanley Thornes, London, pp. 3 – 8. [21]*Ibid*.

of the geneticists followed a procedure and the rules can be rationalized as the passage of physical factors each controlling a separate heritable trait from parents to offspring during production.[21]It was the study of Mendel‘s pollination experiments on garden peas that led to the discovery of the two fundamental principles of genetics, viz: the law of heredity and the law of variation.

The law of heredity states that there is a tendency of offspring to possess the characteristics of either or both of its parents. This is because the parental organism produce itself in the offspring by causing the latter to organize in the same definite way.

On the other hand, Law of Variation states that there is a tendency for the offspring to be different from their ancestors and one another. It is as a result of these variations that differences exist between member of the same family and individuals of the same species. These similarities and variations can be transmitted from generation to another. The story of nature of these similarities and variations, their causes and resultant effect are what constitute the science of genetics.[22]

The study of genetics continued into the 20th century and Mendel‘s ideas were put into test. The factors that occurred in the experiment he made with peas were genes. Simply put genes are the basic units of heredity and are present in the cells of all living organisms.

In order to understand how heredity in living organism operates. It became important for further identify the gene and materials it is composed of and that material is what is known as De-exoribonuclease acid (DNA) which contains sugar consisting of complex molecules present in chromosomes of all plants and the animal cells, carrying in coded form of instructions for passing on heredity characteristics out of this study in genetics and man‘s

insatiable quest for developing new technology. From the knowledge gained in the science of genetics, a branch emerged as genetic engineering.

Therefore, genetic Engineering is the technology of preparing recombinant DNA into vitro molecules and splicing together fragments from more than one organism.[23]a science dealing with biological science whose ultimate aim is to control heredity defects by the modification or elimination of certain genes. In other words, it is the changing the structure of the genes.

[22]Brown, *op. cit*., pp. 12 - 14

[2323]http://play.google.com/store, Advanced English dictionary– offline Dictionary, *op. cit.*

1.3 Reliability and Safety of Genetically modified foods

There have been two opposing opinions on the safety and reliability of genetically modified foods. The question has always been how safe is consuming these foods and the extent of the food reliability. The Word Health Organization (WHO) view that different GM organism include different genes inserted in different ways. This means that individual GM foods and their safety should be assessed on a case-by-case basis and that it is not possible to make general statements on the safety of all GM foods. GM foods currently available at the international market have passed safety assessment and are not likely to present risks for human health.[14]

Generally, consumers consider that conventional foods (that have an established record of safe consumption over the history) are safe. Whenever novel varieties of organisms for food use are developed using the traditional breeding methods that had existed before the introduction of

[14] https://www.who.int/news-room/questions-and-answers/item/food-genetically-modified, visited on 12/3/2022. at 12:49 pm. [25]*Ibid*.

gene technology, some of the characteristics of organisms may be altered, either in a positive or a negative way. National food authorities may be called upon to examine the safety of such conventional foods obtained from novel varieties of organisms, but this is not always the case.[25]

In Nigeria, the debate around the safety or otherwise of Genetically Modified (GM) crops have continued to divide opinions in Nigeria. Some groups have called for the ban of genetic modification of food crops and animals due to concerns over its impact on agriculture and the alteration of the ecosystem.[15]

In contrast, most national authorities consider that specific assessments are necessary for GM foods. Specific systems have been set up for the rigorous evaluation of GM organisms and GM foods relative to both human health and the environment. Similar evaluations are generally not performed for conventional foods. Hence there currently exists a significant difference in the evaluation process prior to marketing for these two groups of food.[16]

The WHO Department of Food Safety and Zoonoses aims at assisting national authorities in the identification of foods that should be subject to risk assessment and to recommend appropriate approaches to safety assessment. Should national authorities decide to conduct safety assessment of GM organisms, WHO recommends the use of Codex Alimentarius guidelines.[17]

In Nigeria, the agency responsible for evaluation and guaranteeing the safety of the Genetically Modified Organism (GMO) is known as National Bio-Safety Management Agency (NBMA). In a

[15] https://www.premiumtimesng.com/agriculture/agric-news/476373-geneticallymodified-crops-key-to-nigerias-food-security-govt-says.html, visited on 21/3/2022 at 10:00 am
[16] https://www.who.int/news-room/questions-and-answers/item/food-genetically-modified, *op. cit.*
[17] *Ibid*.

workshop in 2021, the Director-General/Chief Executive Officer of the agency**,** while speaking at a workshop, said his agency is working to ensure that only safe genetically-modified seeds and grains are allowed into Nigeria for food and feed processing. He said: ―Globally, safe science and technology have been known to be drivers of economic change world over, Nigeria cannot afford to be left behind that is why the federal government through NBMA makes sure it approves only safe application of modern biotechnology for the economic development of the country

particularly in the Agricultural sector.‖[18]

1.4 Legal Aspect

The law in this respect set regulatory standard on human activities on the environment to the barest standard of safety. This is done because she monitors primary needs for existence include energy in the form of organic foods and they must be capable of being assimilated and most contain adequate amount of proteins, fats, carbohydrates, vitamins and minerals. All these available resources must be managed with care to provide for the future.[19] The European Economic Community in relation with third world countries, its member States and other the international organizations indicated in Article 130 the regulatory measures on human activities in order to keep the environment safe. [31] Although the regulation for the protection of the environment is not general, there has been a great awareness for the need to protect the

[18] https://www.premiumtimesng.com/agriculture/agric-news/476373-genetically-modified-crops-key-to-nigerias-food-security-govt-says.html, op. cit.

[19] Margret, F.O., (1990), Law of Environmental Protection, Ibadan, Nigeria, Ca/Top Publications Limited, p 17 - 25 [31]Nigel, F. (1990), EEC Legislation, London Blackstone‘s Press Limited, pp. 40 and 41

environment, particularly as the use of genetic modification techniques is on the increase. [20] To achieve the set goal, the Environmental Protection Act 1990 was enacted. It contains specific provisions for the safety and genetically modified organisms.[21]

Section of the Act, particularly section 160 (1), (2), (3) provides that ―An organism is genetically modified if any of its gene is inherited or derived from gene or genetic material have been modified by means of a prescribed artificial technique,‖ also, if the genes are inherited or derived from gene or genetic material capable of causing harm to living organisms supported by the environment.[22]

Furthermore, the section goes further to define harm by saying that harm means harm to human health or other living organisms or other interference with the ecological systems of which they form part. [23] And in case of man, it includes harm caused or to his

property.[24]

Basically, the control is exercise where a person imports, acquires, releases, markets or keeps any genetically modified organisms.[37]Despite these controls, before one can obtain, acquire, market, release or continue to keep genetically modified organisms, the person must obtain consent from the Secretary of the State. And if the constant is granted, it may contain conditions which will continue to have effects on the holders of the consent until it expires.[25] However,

[20] Peter, M.A., M., (1992), Encyclopaedia of Forms and Precedent, Butterworth and Company Publishers Limited, London. p. 197.
[21] *Ibid*.
[22] *Ibid.*
[23] *Ibid.*
[24] M.A., M., Peter, *op. cit.*, pg. 192 [37]*Ibid*.
[25] *Ibid*. p. 193

that is an implied condition to the consent granted. That is, the holder of the consent of importing, acquiring, and releasing genetically modified organisms must take reasonable steps to be updated, and he must also be informed of any known risks that may cause damage to the environment. Therefore, there should not be any damage as a result of his own acts, but if there risks that seem more than the consent granted to him, he is to notify the Secretary of State of the United States of America.[26]

However there is a limitation where the Secretary of State perceives a threat to the environment. He may serve a notice prohibition the doing of the above specified act and must dispose such organisms if required to do so.[27]

Finally, the Secretary of the State could appoint inspectors and grant them power to enter promises to carry out test and inspections, and take sample of genetically modified organisms. They also are granted the power to take possession of and dispose of any modified organism which they have reason to believe can be a cause of imminent danger to the environment. And any violator of the regulation save by the act, with regards to risk assessment, acquiring, marketing and releasing genetically modified organisms without you notifying the Secretary of State has committed an offence, and reasonable steps would be taken by the Secretary of State to bring the guilty persons and hold them liable for any damage caused to the environment.[28]

[26] *Ibid*. pp 193 - 194
[27] *Ibid* p196.
[28] *Ibid*., pp. 196 -198.

In Nigeria, there is no effective bio-safety legislation regulating any aspect of the development and deployment of modern biotechnology or its output. In this respect the major regime in existence is the National Biotechnology Policy that was approved by the Federal Executive Council on 23rd April 2001, with its overall objective being to provide a regulatory regime and guidance for the sustainable development of the science of modern biotechnology , its application and safe use of its product without prejudice or risk to public health, environmental health, national sovereignty, human dignity and fundamental human rights.[29]

However, with a view to harness the potential benefits of modern biotechnology whilst safeguarding against its potential risks, Nigeria, among other countries, has ratified the Convention on Biological Diversity (CBD) and Bio-Safety Protocol. Consequently, under those treaties and in view of their detailed provisions, Nigeria is generally obliged to take appropriate legal, administrative and other measures. This includes putting in place adequate bio-safety regulations to ensure that the development, handling, release and use of Living Modified Organisms (LMOs) and Genetically Modified Organisms (GMOs) is undertaken in a manner that prevents or reduces the risks to biological diversity and human health.[30]In this vein, Nigeria officially signed Bio-Safety Bill into law in 2015, making it eligible to join the League of Nations already using Genetic Engineering (GE) to boost food production.[31]

[29] Etemire, U. (ND), Country Report: Nigeria, The Cart before the Horse? Biosafety Regulations and Modern Biotechnology Activities in Nigeria, IUCNAEL EJournal, p. 313

[30] Ibid., p. 314

[31] http//:www.premiumtimesng.com/news/top-news/430096-gmo-lawyers-speak-on-gaps-in-nigeriasboisafety-law-html., visited on 21/3/2022 at 11:33 am

1.5 The Ethical and Medical Perspectives of Genetically Modified Foods

Basically, the arguments about ethics and the issue at stake is all about respect for human life.[32]

When then is ethics?

The term ethics is derived from the Greek word, ―*ethos*‖ meaning custom. It is concerned with morality of human action with an aim not directed towards improving men's conduct four character, but rather towards understanding and establishing by reflection and analysis the principles standards and ideas which apply two judgments about human conduct. Ethics is the study of human action whether they are right or wrong.[33] The next question is why modified crops genetically?

To the above question, many actions and conduct have made the issue of genetically modified crops ethically controversial. Of these is the decision to plant, purchase, eat and regulate genetically modified foods.[34] These issues affect vegetarians, in that genetic engineering may involve the transfer of animals‘ genes into plants. They state that the labels are important for the health and safety of the consumers.[48]

The discussions of the ethical dimensions of agricultural biotechnology are sometimes confused by a conflation of two objections to genetic modification technology: Intrinsic and extrinsic.[35] The extrinsic objections hold that genetic modification technology should not be pursued because of its anticipated results the objections follow, in that genetically modified

[32] Autton, N. (1984), Doctors Talking, London, Mowbray Limited, p. 150
[33] Brown, T. O., (Unpublished) A dissertation on the Legal Moral and Ethical Implications of Human Cloning and Experimentation, (Available of Faculty of Law Library Bayero University, Kano). p. 8
[34] http://www./csc.ed/NS350/issues/crops.ethi.ntro. P. 1 of 1 [48]*Ibid*.

[35] http://www.agbios.com/articles/2002v98-A.htm p. 2 of 5 [50]*Ibid*.

organism may have disastrous effects on animals‘ ecosystems and humans. However, despite of is extrinsic objections on genetically modified organisms there is the possibility that the benefits outweigh the harms.[50] The intrinsic objections simply allege that the process of making genetically modified organisms is objectionable itself.[36] The ethical debate is upsetting too many religious groups. Religions individuals have strong grounds to reject the products of genetic engineering.[37] Their view is not just based on personal safety but also concern for the integrity of God's creation and that of humanity's relationship with God. The religious individuals also say that such a rejection has a religious dimension and is a religious right.[38] The religious leaders ask the question that: is it ethically acceptable to tamper with the genetics of another organism created by God? Should genetic alteration be considered as creation and if so, are scientists playing

God?[39] They say God created this universe and all the organisms living in it. Therefore, by altering the exact substance that defines an organism deoxyribonucleic acid (DNA), the resulting organism stays away from what it was originally created to be.[40]

In actuality the ethics of genetically modified foods is only the beginning in a long debate about genetics in general. This is so because most questions manifest themselves when looking at altering the human genome.It also appears that history will guide itself on this topic and it further informed about the developments in the field of genetically altered foods and express

[36] *Ibid*.

[37] http://www./csc.ed/NS350/issues/crops.ethi.ntro.

[38] http://www.bio-integrity.org/Rel/Reject.Html.

[39] http://www.westmot.edu/departments/biology/journals/wjneuroscience/ volume 3, p. 1 of 5

[40] *Ibid*.

our opinion upon what we think is ethical. The only thing left is to weight and hope that we are doing what is best for the betterment of the world.[41]

1.6 Medical Perspectives of Genetically Modified Food

The limiting reagent in the chemical reaction of prosperity for many societies is basic nutrition.[42] By the year 2020 the world population is projected to increase by 30%. There is very little arable land left to farm. Development of techniques to gain higher crop yields and more nutritious food products could possibly raise the standard of life for hundreds of thousands, if not millions of people. The genetic alteration of food products and the use of pesticides have a drawback. The situation is analogous to taking medication. The drug may make a patient's symptoms feel better but there could be side effects.[43] Hence, the organisms change genetically by re-assortment of properties coded by the genomes of parents buy heritable changes in the genome sequences themselves.[44] Due to these known facts, the British Medical Association call for aggregating genetically modified organisms and non-genetically modified organisms. So that health effects of eating genetically modified food can be tracked. The association does not contend that genetically modified foods are dangerous but recommends proceeding slowly since there is no proof of safety or knowledge of the long-term implications of eating such foods.[45] The American Medical Association agrees that the issue of

[41] Ibid. p. 4 of 5

[42] www.westmont.edu/departments/biology/journals, *Op. cit*., p. 1 of 5.

[43] *Ibid*.

[44] Oosthuizen, G. C., Shapiro, H. A., et. al. (1980), Genetics and Society, Oxford University Press, Cape Town, pp. 18 – 19.

[45] http://www.ctezens.org/Food-Water-Safety/Genetic Engineering/GMO risk negatives. Html, p. 1 of 3 [61]*Ibid*.

safety needs to be reviewed in the light of the new dietary applications of genetically modified food.[61]

1.7 Consequential Legal Perspectives of Genetically Modified Foods

What legal consequences would arise if by using of the science in genetic manipulation and the new technology of genetic engineering to alter and modified crops led to health or environmental complications?

Looking at the goal objective of modifying crops genetically the aim is to make food more nutritious and abundant for human consumption but the question still remains whether the technology is safe? And this is the job of the scientist to describe and explain what the procedure entails, why is it undertaken and what its ultimate implications are for a specific person or mankind. [46] The major priority of the producers of genetically modified foods is safety of the consumer. And to this effect, the consumer can Institute a legal action where he consumes such foods and the food proves to be dangerous to health.[47]

Therefore, producers of foods are to make presentations on the safety of their foods and the presentations should not be made in a way that is likely to mislead the consumers.[48] The producing industry is to ensure that food is of the natural substance and quality expected by consumers. It should be neither injurious to health nor unfit for human consumption.[49]

[46] Oosthuizenand Shapiro, *et. al*. *Op. cit*. pp. 62 – 66.
[47] Cranston, R., (1978), Consumers and the Law, Wilimer Brothers Limited, Berkinhead, London, pp. 255 - 258
[48] Ibid. pp. 288 – 291.
[49] Ibid. pp. 317 – 319.

Monsanto Corporation in the United States is the largest biotechnology company in the world and they have been foreigners in the industry for many years. Being an international corporation Monsanto has sold many different strains of genetically altered food products to a number of third world countries. This day did buy patenting the genetics of the crops. There are currently developing strains of crops that they do not yield viable seeds. These changes would be in the genetics inherent in the cross. This would make it impossible for farmers to use seeds from various years for next year's crops.[50] From here the purpose for patent should be examined.[67]

A patent confers exclusive monopoly rights to an inventor to exploit a product or a process for a limited period, usually 17 years. Importance are granted in exchange for the disclosure of an invention. [51] They serve the purpose of encouraging technological advancement by use of incentive. If someone were to create a new product or even a new idea, they would gain the exclusive rights so that idea.[69] One of the first laws ever enacted on this topic was the plant patent act 1930. This was to protect new varieties of plants from unauthorized asexual production. Later in the plant variation production act 1970 provisions were made to exclude sexual reproduction. By creating these laws readers are required to deposit samples of newly created plants and not just to describe how the plant was created.[52] All these laws were made in the United States.

However, in 1980 the Supreme Court in the United States gives a decision on this subject. The court decided that a certain biologist patent his new strain of bacteria because "his discovery

[50] www.westmont.edu/departments/biology/journals, op. cit., p. 2 of 5 [67]Ibid.

[51] Pat, S., (1992), Generation Games, Temple University Press, Philadelphia, U. S. A. p. 66 [69]Ibid.

[52] *Ibid*.

was not nature's handiwork but his own". Thus, the Supreme Court holds the view that nature is patentable.[53]

In Nigeria, Nigeria lawyers, during a round table discussion on bio-safety laws organized by the Health of Mother Earth Foundation (HOMEF), agreed that any perceived threats posed by the GMOs should be continuously challenged through litigations, with concerned experts in bio-safety and lawyers working side by side. In September 2017, HOMEF and 16 other civil society organizations has filed a suit against the NBMA and

NABDA over the approval it granted Monsanto Agricultural Nigeria Limited to release

(GM) crops in Nigeria. However, the suit was struck out by the Federal High Court in Abuja. Though the cause of action was established, the presiding judge held that the court was compelled to strike out the suit because it appeared statute-barred. This means that the suit was brought a year after the permit has been issued.[54]

From what has been discussed, it is apparent that since patent gives exclusive rights for exploitation this presupposes that the inventor has put in place all necessary measures to guarantee the safety of his products and any negligence attributed to the inventor makes him liable.[73]

1.8 Conclusion

From the above discussions, the conclusions drawn on the outcry and concern on the

GMO are here under outlined thus

[53] *Ibid*.

[54] http//:www.premiumtimesng.com/news/top-news/430096-gmo-lawyers-speak-on-gaps-in-nigeriasboisafety-law-html., visited on 21/3/2022 at 11:33 am [73] Pat, S., *op. cit.*

1. The first issue on genetically modified foods is on the health and safety for human consumption. Laws against genetically modified products call for a ban on such products. While on the other spectrum there is a call to label such genetic products. From the attitudes of voice calling for label on genetic products indicate uncertainty because they are not really sure of what the effects would be after consuming such products. The whole trouble is not one that look at the present only but the future as well because consuming a level does of genetic products may result in new diseases which may have devastating effects on human health. Now even the proponents of genetically modified foods are not exactly certain about the dangers.[55] There for strict monitoring of the new technology is needed and more tests should be carried out.

2. Secondly despite the advantages of genetically modified foods they pose a great threat to the environment this is so because the genetically modified organism may affect the fertility of the soil or end of destroying the soil and render it infertile. Another instance is the genetically modified organisms may affect natural crops and contaminate them. Although these are potential dangers for the environment they are yet to be fully known.

3. The third situation is one that borders on the economy. If the corporations that produce genetically modified food are granted patent, they tend to monopolize seeds for planting. This means farmers can only buy seeds from The Corporation for one planting season and farmers will no longer be able to plant in another season and that will force them to go back and buy from the corporations that would use genetic foods. And this will wreak havoc in developing countries in that it will only serve to make them poorer.

1.9 Recommendations

[55] http://www.ctezens.org/Food-Water-Safety, *op. cit.*, p. 1 of 1

Based on the above conclusions, the following recommendations are proffered thus:

1. In the very first instance genetically modified food should be labeled. The public should be aware of the nature procedure and technology used in producing such genetic products. The technology must be strictly monitored by the government health environmental and other agencies, series of tests should be carried out and the public should be assured of its safety for consumption.

2. Secondly the public should be educated about the techniques of genetic manipulation of crops. This should be achieved through the media magazines the internet through dialogue advocacy and other effective means of communication.

3. Finally, even if genetic products are confirmed to be safe for human consumption and thereafter injury to health issue arises due to consumption of such products, the corporation and the Industries should be held responsible. Whether the effect is short or long-term provided it is certified that it was caused by consuming genetic products should suffice.

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