



GMOS, HUMAN RIGHTS, AND INTERNATIONAL LAW: AN EXAMINATION OF THE IMPLICATIONS OF GMOS ON HUMAN RIGHTS PROTECTION

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Cite this article:

Awe, A. (2025), GMOS, Human Rights, and International Law: An Examination of the Implications of GMOS on Human Rights Protection. African Journal of Law, Political Research and Administration 8(3), 14-23. DOI: 10.52589/AJLPRA-CIJGLJ7X

Manuscript History

Received: 12 Feb 2025

Accepted: 18 Mar 2025

Published: 4 Nov 2025

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ABSTRACT: *The impact of Genetically Modified Organisms (GMOs) on human rights has attracted much attention recently, sparking debates from commentators. This is with particular to the right to information, the right to food, and the right to a healthy environment. GMOs were developed out of necessity to meet the increasing demand for food for a growing population. Further research has indicated that GMOs not only enhance food production but also offer greater nutritional value and are more resistant to pests, diseases, and harsh climate conditions. This suggests a win-win situation, as GMOs improve food security, reduce hunger, and enhance agricultural efficiency. However, there are concerns that GMOs pose risks to environmental sustainability, particularly with the loss of biodiversity, which can significantly disrupt the balance of the food chain and human health. The doctrinal research methodology will be adopted in this research, and reliance will be placed on journal papers, online resources, reports, and primary sources. This study concludes by recommending the creation of stricter laws on labeling GMO foods and the need for independent research to understand the long-term effect of GMOs on human health and the environment—equally, the stretching of GMO international regulation.*

KEYWORDS: GMOS, Human Rights, LMOs, International Law, Food Security, ICESCR, UDHR.



INTRODUCTION

Long before scientists developed genetic engineering as we know it today, humans utilised traditional breeding methods like selective breeding and crossbreeding to modify the genomes of plants and animals, allowing for more desirable traits to be produced.¹ This traditional approach was time-consuming and challenging in attaining the precision needed for modifications.² But recently, advancements in genetic engineering have enabled precise control over the genetic alterations injected into organisms, all within a brief timeframe. Now, the gene from one species can be placed into that of another unrelated species through genetic engineering.³ This technology is commonly used in agricultural plants, making it the most cited example of genetically modified organisms (GMOs).⁴

GMOs have been said to transform agriculture by increasing crop yields, reducing the reliance on chemical pesticides and insecticides due to the crops' resistance to pests and insects, and enhancing the nutritional composition of food.⁵ These benefits of GMOs have contributed to food security, which is required for 'global stability, human well-being and, long-term prosperity' for the world's growing population.⁶ Furthermore, due to the increasing use and commercialisation of GMOs, concerns and debates have arisen as to how GMOs impact the human rights of individuals, especially their right to food, health, a healthy environment, and informed choice.

Critics argue that GMOs will have unpredictable and horrifying consequences on human health and the environment.⁷ In addition, manufacturers not indicating on their labels that their food was developed through genetic engineering, depriving consumers of their right to choose, has not helped matters.⁸ On this note, this paper will examine the intersection of GMOs, human rights, and international law. It will begin by discussing the history of GMOs. It will further explore human rights protections under various international laws and conventions, including the Universal Declaration of Human Rights (UDHR), the International Covenant on Economic, Social and Cultural Rights (ICESCR), and the Cartagena Protocol on Biosafety (Cartagena Protocol).

¹"Science and History of GMOs and Other Food Modification Processes," *Food and Drug Administration* <<https://www.fda.gov/food/agricultural-biotechnology/science-and-history-gmos-and-other-food-modification-processes#:~:text=How%20are%20GMOs%20made?,Then%20growing%20the%20new%20organism>> accessed 7 February, 2025.

² Ibid.

³ Theresa Phillips, "Genetically Modified Organism (GMOs): Transgenic Crops and Recombinant DNA Technology" (2008) 1(1) *Nature Education* <<https://www.nature.com/scitable/topicpage/genetically-modified-organisms-gmos-transgenic-crops-and-732/#:~:text=When%20it%20comes%20to%20genetically,of%20these%20organisms%20a%20challenge.>>> accessed 7 February, 2025.

⁴ Ibid.

⁵ Ibid.

⁶ Xingru Cheng and Others, 'Trends in the global commercialization of genetically modified crops in 2023' (2024) 23(12) *Journal of Integrative Agriculture* <<https://doi.org/10.1016/j.jia.2024.09.012>> accessed 10 February, 2025.

⁷ Claire Bowes, "Flavr Savr tomato: The world's first genetically-engineered food," (BBC Sounds, 27 December, 2023) <<https://www.bbc.co.uk/sounds/play/w3ct4xkj>> accessed 10 February, 2025.

⁸ Bawa AS and Anilakumar KR, "Genetically modified foods: safety, risks and public concerns- a review" (2012) (6)50 *Journal of Food Science and Technology* <<https://doi.org/10.1007/s13197-012-0899-1>> accessed 10 February 2025.



Additionally, the paper will analyse the implications of GMOs for human rights. It will provide commentary on whether GMOs genuinely affect our rights or if these concerns are mere fallacies and recommend solutions where necessary.

CONCEPTUAL FRAMEWORK

GMOs

In 1983, the first genetically modified organism (GMO) was created using an antibiotic-resistant tobacco plant. China became the first country to commercialise GMOs by genetically modifying a crop in the early 1990s. This was ultimately achieved by introducing a virus-resistant tobacco variety.⁹ Meanwhile, in the United States, Flavr Savr tomatoes became the world's first GMO food available for sale in 1994 after the Food and Drug Administration deemed them safe for consumption.¹⁰ These examples demonstrate that GMOs are not a recent development. So, what exactly are GMOs?

GMOs¹¹ are organisms created through a scientific process known as genetic engineering¹² where a particular DNA from one organism is selected and inserted into the genetic material of another organism.¹³ By introducing this new DNA and altering an organism's genetic content, scientists can enhance or introduce desired traits in that organism, and they can control or get rid of undesirable traits.¹⁴ GMOs, or genetically modified organisms, can be broadly categorized into two types: living-modified organisms (LMOs) and bulk commodities.¹⁵ However, LMOs can reproduce and grow, while bulk commodities refer to processed products such as the food we consume.¹⁶

The modification of DNA is mostly done on crop plants and farm animals, which makes them good examples of LMOs.¹⁷ One example of a farm animal that has undergone genetic engineering is the salmon fish, which has been modified to grow larger and mature more quickly.¹⁸ An example of a crop plant that has been genetically engineered is the Flavr Savr tomato. These tomatoes were modified to taste better, ripen gradually, remain fresh for an

⁹ Ibid.

¹⁰ "Science and History of GMOs and Other Food Modification Processes."

¹¹ It can also be called transgenic organism or Frankenfood in a derogatory way.

¹² It is also referred to as gene technology or recombinant DNA technology.

¹³ Rashmi Patowary, "Scrutinizing the Impact of GMOs through the Prism of the Human Rights," (2014) 7 (6) *OIDA International Journal of Sustainable Development*, p.81 <<https://ssrn.com/abstract=2503055>> accessed 7 February, 2025.

¹⁴ Ibid.

¹⁵ Both LMOs and bulk commodities are GMOs. GMOs and LMOs refer to the same thing and can be used interchangeably.

¹⁶ Katherine E. Kohm, 'Shortcomings of the Cartagena Protocol: Resolving the Liability Loophole at an International Level' (2009) (1) 27 *UCLA Journal of Environmental Law and Policy*, p.146, <10.5070/L5271019566> accessed 14 February 2025.

¹⁷ Theresa Phillips, "Genetically Modified Organism (GMOs): Transgenic Crops and Recombinant DNA Technology."

¹⁸ Ibid.



extended period, and have a longer shelf life, allowing them to be transported over long distances without spoiling.¹⁹

The primary goals of introducing new DNA into crops include enhancing their growth rates, increasing their nutritional content, improving sustainability in various environmental conditions, and developing greater resistance to pests and diseases.²⁰ Concerning the improvement of sustainability in different environments, advancements in genetic engineering in crops have made crops mature faster and tolerate aluminum, boron, salt, drought, frost, and other environmental stressors, allowing them to thrive in conditions they would not normally survive.²¹ This technology holds promise for addressing challenges like climate change and food shortages while promoting sustainable farming practices. Although GMOs hold this promise, there are still concerns about their long-term impact.

Debates regarding the use of GMOs stem from the potential long-term detrimental consequences it will have on our health and the environment.²² GMOs involve altering an organism's DNA, which can change its metabolism, growth rate, and response to environmental factors. Critics argue that these changes could pose potential health risks to humans as they could expose them to new allergens and organisms that are resistant to antibiotics.²³ They also argue that the environmental impacts of GMOs are significant. Changes in the DNA of crops could pose a threat to beneficial insects in the ecosystem, endanger the animals that consume GMO plants and result in unwanted or lasting effects on the soil where GMO crops are cultivated.²⁴ Moreover, it could potentially lead to the development of superweeds or super pests due to crossover mutations in native plants and insects, which cannot be controlled by current insecticides and herbicides.²⁵ Furthermore, it is believed that GMO crops transfer their new traits to their non-GMO relatives through unintentional cross-breeding, which is likely to affect the integrity of biological diversity.²⁶

¹⁹ Claire Bowes, "Flavr Savr tomato: The world's first genetically-engineered food."

²⁰ Ryan Raman, "GMOs: Pros and Cons, Backed by Evidence," Healthline (9 January, 2024) <<https://www.healthline.com/nutrition/gmo-pros-and-cons>> accessed 10 February 2025.

²¹ Theresa Phillips, "Genetically Modified Organism (GMOs): Transgenic Crops and Recombinant DNA Technology."

²² Ryan Raman, "GMOs: Pros and Cons, Backed by Evidence."

²³ Theresa Phillips, "Genetically Modified Organism (GMOs): Transgenic Crops and Recombinant DNA Technology."

²⁴ Werkissa Yali, "Application of Genetically Modified Organism (GMO) crop technology and its implications in modern agriculture" (2022) J Agric Sc Food Technology (1)8 <<https://dx.doi.org/10.17352/2455-815X.000139>> accessed 10 February, 2025.

²⁵ Katherine E. Kohm, 'Shortcomings of the Cartagena Protocol: Resolving the Liability Loophole at an International Level' p.152.

²⁶ Juan Antonio, 'International Law and GMOs: Can the Precautionary Principle Protect Biological Diversity?' (2007) 40 (118) Boletín mexicano de derecho comparado <https://www.scielo.org.mx/scielo.php?script=sci_arttext&pid=S0041-86332007000100004#notas> accessed 13 February 2025



Human Rights

As human beings, we possess inherent rights simply by existing. This principle is founded on the belief that “all human beings are born free and equal in dignity and rights.”²⁷ Human rights are universal, that is, they apply to all human beings and are guaranteed to all individuals, regardless of their nationality, sex, ethnic origin, color, religion, language, age, or any other status.²⁸ These rights are intrinsic to humanity and not granted by governments; they are inalienable, meaning they cannot be taken away except in exceptional circumstances.²⁹ These rights are essential for the preservation and sustenance of human dignity.³⁰

Some human rights granted to individuals include the right to life, the right to privacy, the right to freedom of expression, and the right to liberty, among others. Human rights are primarily concerned with the relationship between individuals and the state.³¹ These rights and more have been specifically listed in various international laws, such as the Universal Declaration of Human Rights, the United Nations Charter, the International Covenant on Civil and Political Rights, and the International Covenant on Economic, Social, and Cultural Rights.

Human Rights Protection Under International Law

Human rights are essential, and various conventions and international laws, to prove this point, outline the rights that constitute the foundation of human rights. This paper will briefly discuss some of these international human rights laws, including the Universal Declaration of Human Rights, the International Covenant on Economic, Social, and Cultural Rights, and the Cartagena Protocol on Biosafety.

Universal Declaration of Human Rights (UDHR)

The Universal Declaration of Human Rights was proclaimed and adopted by the United Nations General Assembly in 1948.³² This document was the first legal document that universally set out and protected fundamental human rights. It is also the foundation upon which all other international human rights laws are built.³³ This legal document consists of 30 articles that cut across all aspects of human rights, from personal rights to political rights, social rights, and cultural rights. Some of these rights include the right to equality,³⁴ the right to

²⁷ Universal Declaration of Human Rights (adopted 10 December 1948) 217 A(III) (UNGA), art 7, <https://www.un.org/en/udhrbook/pdf/udhr_booklet_en_web.pdf> accessed 10 February, 2025.

²⁸ United Nations Human Rights, “What are human rights?” (OCHR, 2024) <<https://www.ohchr.org/en/what-are-human-rights#:~:text=Human%20rights%20are%20rights%20we,language%2C%20or%20any%20other%20status.>>> accessed 10 February, 2025.

²⁹ Ibid.

³⁰ Rashmi Patowary, “Scrutinizing the Impact of GMOs through the Prism of the Human Rights.”

³¹ Jonathan M. Mann and Others, ‘Health and Human Rights’ (1996) 1 *Health & Human Rights*, p.10, <<https://shorturl.at/WICXy>> 10 February 2025.

³² United Nations, ‘Universal Declaration of Human Rights,’ (United Nations, 10 December 1948) <<https://www.un.org/en/about-us/universal-declaration-of-human-rights>> accessed 11 February, 2025.

³³ United Nations Human Rights, “What are human rights?”

³⁴ Article 1, UDHR.



education,³⁵ the right to life,³⁶ the right to a good standard of living,³⁷ Et cetera. The UDHR is not legally binding but has been granted legitimacy by states through their legal and political invocation. It is cited in various states' constitutions, and governments refer to it when accusing each other of violating human rights.³⁸

International Covenant for Economic, Social, and Cultural Rights

The International Covenant for Economic, Social, and Cultural Rights was adopted by the United Nations General Assembly on December 19, 1966.³⁹ It entered into force on January 3, 1976, and with ratifications from 160 countries.⁴⁰ The text outlines several human rights, with a particular emphasis on socioeconomic rights like the right to just and favorable working conditions, fair wages,⁴¹ to form and join the trade union of choice,⁴² to 'social security including social insurance,'⁴³ and to an adequate standard of living including *adequate food*.⁴⁴ The ICESCR sheds more light on the provisions in the UDHR and sets out instances where States can restrict the rights provided in the document.

The Cartagena Protocol on Biosafety

This Cartagena Protocol is one of the main responses to the need for a legal framework that will tackle the issues arising from the development of genetic engineering.⁴⁵ The Protocol was adopted on January 29, 2000, as an additional agreement to the Convention on Biological Diversity and entered into force on September 11, 2003.⁴⁶ The treaty specifies:

...the objective of the Protocol is to contribute to ensuring an adequate level of protection in the field of the *safe transfer, handling, and use of living-modified organisms* resulting from modern biotechnology that may have adverse effects on the conservation and sustainable use of biological diversity, taking also into account risks to human health, and specifically focusing on transboundary movements.⁴⁷

This means that the treaty was created to regulate the use, handling, and transfer of Living Modified Organisms (LMOs) to protect the environment and human health. The treaty, in

³⁵ Article 26, *ibid*.

³⁶ Article 3, *ibid*.

³⁷ Article 25, *ibid*.

³⁸ Jonathan M. Mann and Others, 'Health and Human Rights'. 10.

³⁹ United Nations, 'International Covenant on Economic, Social and Cultural Rights,' (United Nations, 16 December, 1966) <https://www.ohchr.org/en/instruments-mechanisms/instruments/international-covenant-economic-social-and-cultural-rights> accessed 12 February, 2025.

⁴⁰ Council of Europe, 'International Covenant on Economic, Social and Cultural Rights - Manual for Human Rights Education with Young People - Publi.coe.int' (*Manual for Human Rights Education with Young People* 2024) <<https://www.coe.int/en/web/compass/international-covenant-on-economic-social-and-cultural-rights>> accessed 13 February 2025.

⁴¹ Article 7, ICESCR.

⁴² Article 8, *ibid*.

⁴³ Article 9, *ibid*.

⁴⁴ Article 11, *ibid*. Italics are mine.

⁴⁵ Rashmi Patowary, "Scrutinizing the Impact of GMOs through the Prism of the Human Rights," p. 82.

⁴⁶ Unit B, 'About the Protocol' (*The Biosafety Clearing-House (BCH)* 18 May, 2021) <<https://bch.cbd.int/protocol/background>> accessed 12 February 2025.

⁴⁷ Article 1, The Cartagena Protocol on Biosafety.



furtherance of its objectives, allows states to regulate or restrict agricultural LMO importation, provided they assess the products' potential for adverse effects on biodiversity, environment, or human health.⁴⁸ The treaty achieves this by requiring that parties involved in the import or export of LMOs establish an Advanced Information Agreement (AIA) with one another.⁴⁹ This agreement provides that States importing LMOs should provide crucial information that helps them understand what will enter the country. It enables them to prepare for any potential risks and, in the worst-case scenario, to restrict the entry of such organisms.⁵⁰ The treaty established the Biosafety Clearinghouse, an online resource that allows the exchange of information about the use of LMO technologies and the execution of the Protocol.⁵¹

The Cartagena Protocol is a promising regulation; however, it has some shortcomings. In 2007, it was supposed to adopt a liability regime, but no legally binding framework has been implemented.⁵² This indicates that victims of harm caused by LMOs lack a legal redress mechanism. It has equally led to another shortcoming: the regulation does not provide adequate protection against the risks associated with LMOs. There is so much that the AIA requirement can prevent when it comes to reducing potential risks of LMOs. If there is no legal remedy mechanism in place, enforcement will be difficult.⁵³

IMPLICATIONS OF GMOS IN HUMAN RIGHTS PROTECTION

In this section, the paper will examine the various rights secured by the international laws and conventions discussed earlier, as well as the implications of GMOs on these rights. These rights include:

1. The right to adequate food
2. The right to informed choice
3. The right to health
4. The right to a healthy environment

The Right to Adequate Food

Food is essential for human survival.⁵⁴ Having access to adequate food, which provides the right amount of nutrients necessary for growth, health, and overall functionality, is critically important and is closely tied to the right to life. Without food, there can be no life. The right to food is a right that has been captured by various international laws and conventions like the Universal Declaration of Human Rights. It states in Article 25 that “everyone has the right to a

⁴⁸Katherine E. Kohm, ‘Shortcomings of the Cartagena Protocol: Resolving the Liability Loophole at an International Level,’ p.154.

⁴⁹Ibid, p.148.

⁵⁰ Juan Antonio, ‘International Law and GMOs: Can the Precautionary Principle Protect Biological Diversity?’

⁵¹ Katherine E. Kohm, ‘Shortcomings of the Cartagena Protocol: Resolving the Liability Loophole at an International Level,’ p.148.

⁵² Ibid, 153.

⁵³ Ibid.

⁵⁴ Rashmi Patowary, “Scrutinizing the Impact of GMOs through the Prism of the Human Rights,” p. 80.



standard of living adequate for the health and well-being of himself and of his family, including food...”⁵⁵ On the other hand, the ICESCR provides for the right to food in two perspectives where it states in Article 11, that everyone has the right to “adequate food” and everyone has the fundamental right to be “free from hunger.”⁵⁶ Thus, countries that are signatories to these international laws must ensure that their people are free from hunger and have access to adequate food, that is, food with enough nutritional value for growth and survival.

The impact of GMOs on the right to food appears to be positive. As mentioned earlier, GMOs in crops promote food security by increasing food availability to meet the demands of a growing population. This technology has led to higher crop yields, enabling plants to resist pests and thrive in conditions where they would typically struggle, even in the face of climate change. GMO crops have been said to have higher nutritional value than non-GMO crops, and access to food for dietary needs has increased. Study shows that with the increase in crop yields, food products will be sold at a lower cost, making them easily accessible to everyone, including those who cannot afford necessities regularly.⁵⁷

The Right to Informed Choice

The ability to make a decision or choice based on true and complete knowledge about a situation is known as making an informed choice. Every human being has the right to make informed and holistic choices based on their belief, preferences, and reservations. Although not explicitly stated, the UDHR, the ICESCR, and the Cartagena Protocol support this right. In the Universal Declaration of Human Rights (UDHR), the right to informed choice can be inferred from Articles 19 and 26(1). These Articles protect individuals' rights to form opinions, access information, share information, and receive an education, all of which enable them to make informed decisions. The ICESCR similarly implies this right in Articles 12 and 15. Additionally, the Cartagena Protocol addresses this right in the context of biosafety and biotechnology, specifically in Articles 10 and 23.

The impact of GMOs on this right could be negative. This is because most of the information about GMOs, especially the negative information, is based on a terrifying combination of a few studies and fear. Additionally, manufacturers of GMO Food oftentimes neglect to specifically label their products as GMOs, which takes away an individual's right to information and right to make informed decisions based on that information.⁵⁸

The Right to Health

Health can be defined in various ways. It can refer to the complete absence of disease or the ability to adapt and survive in an evolving environment.⁵⁹ This definition implies that health encompasses both freedom from illnesses and the capacity to thrive in new surroundings. The UDHR and the ICESCR state that every human has the right to health.⁶⁰ The ICESCR outlines specific steps states can take to protect this right. Therefore, states, especially signatories to

⁵⁵ Universal Declaration of Human Rights.

⁵⁶ The International Covenant for Economic, Social and Cultural Rights.

⁵⁷ Werkissa Yali, “Application of Genetically Modified Organism (GMO) Crop Technology and Its Implications In Modern Agriculture.”

⁵⁸ A.S. Bawa and K.R. Anilakumar, “Genetically modified foods: safety, risks and public concerns- a review.”

⁵⁹ Rashmi Patowary, “Scrutinizing the Impact of GMOs through the Prism of the Human Rights,” 80.

⁶⁰ Article 25 (1) UDHR and Article 12(1) and (2) ICESCR.



these treaties, have to protect this right by providing a good healthcare system, preventing, treating, and controlling diseases, and providing a healthy environment that allows humans to thrive.⁶¹

The impact of GMOs on this right is under debate. Research was conducted to examine the effects of transgenic pesticides on rats, which resulted in the deterioration of their intestines.⁶² This study was attempted to be used as evidence of the harmful effects of GMOs on human health. However, the methodology used in these studies has been challenged as being deficient.⁶³ In addition to this contested research, there is little scientific evidence supporting the claim that GMOs are detrimental to human health.⁶⁴ Many concerns about the impact of GMOs on human health are based on few studies and speculation, fueled by fear of the unknown and potential risks they may pose in the future. However, research has shown that GMOs do not pose a threat to human health.

The Right to a Healthy Environment

The right to a healthy environment is closely related to the right to health. This is because to enjoy good health, having a good environment is a prerequisite.⁶⁵ A healthy environment is an environment 'that is safe, supportive of healthy lifestyles, and free of hazards.'⁶⁶ The impact of GMOs on the right to a healthy environment is negative. GMOs are believed to affect the environment adversely, particularly in terms of biodiversity. It is argued that GMO plants can accidentally cross-breed with non-GMO plants, leading to the contamination of their varieties and, consequently, a loss of biodiversity.⁶⁷ Furthermore, the ecosystem is threatened by GMO crops, whose genetic modifications can be harmful to beneficial insects.⁶⁸

COMMENTARIES AND RECOMMENDATIONS

The discussion surrounding GMOs reveals that there is no definitive answer regarding their impact on human rights, particularly concerning the rights to food, health, a healthy environment, and informed choice. For some rights, the impact of GMOs may be positive, while for others, it is negative, and some issues are still up for debate. This lack of clarity is concerning. Certainly, GMOs will continue to be part of our lives, especially in the future, and this shows that an intervention is needed.

Moving on, humanity requires a deeper understanding of how GMOs affect us—an understanding based on truth and facts rather than fear and uncertainty—especially about our

⁶¹ Article 12 (2) (b)-(d), ICESCR.

⁶² Juan Antonio, 'International Law and GMOs: Can the Precautionary Principle Protect Biological Diversity?'

⁶³ Ibid.

⁶⁴ Katherine E. Kohm, 'Shortcomings of the Cartagena Protocol: Resolving the Liability Loophole at an International Level,' p.153.

⁶⁵ Rashmi Patowary, "Scrutinizing the Impact of GMOs through the Prism of the Human Rights," 81.

⁶⁶ Lily F. Roberts and others, 'Healthy Environments: Understanding Perceptions of Underrepresented Communities in the United Kingdom' (2022) 19 (15) International Journal of Environmental Research and Public Health 9643 <<https://doi.org/10.3390/ijerph19159643>> accessed 15 February 2025.

⁶⁷ Rashmi Patowary, "Scrutinizing the Impact of GMOs through the Prism of the Human Rights," 81.

⁶⁸ Werkissa Yali, "Application of Genetically Modified Organism (GMO) crop technology and its implications in modern agriculture."



rights. Governments and international organisations must recognise the urgency of this matter. To address some of the issues outlined in this paper, we propose the following recommendations:

More Research on Long-Term Effects:

There is a need for more independent, long-term human research into the effect of GMOs on our health and environment. Studies available are either controversial or short-term. Governments and international organisations should encourage such research by allocating funds for it. Encouraging independent human research that is free from governmental or corporate influence will ensure transparency and credibility.

Stricter Labeling Laws:

Manufacturers of GMO foods need to clearly label their food products as ‘GMO Foods,’ to uphold and respect the right of consumers to make informed decisions when buying what they put into their bodies. To ensure enforcement, governments and international laws should provide stricter laws that mandate clear and specific labeling of GMO foods.

Strengthening GMO Regulations:

The creation and adoption of the Cartagena Protocol to regulate living-modified organisms (LMOs) at the international level is a step in the right direction. However, the Protocol is replete with flaws and has certain loopholes. Notably, it does not offer clear legal remedies for victims harmed by LMOs. To strengthen this regulation, a legal redress mechanism has to be provided.

CONCLUSION

GMOs will be a continual fixture in our lives. There is continuous advancement, and no one knows how far it will go in the future. These are international human rights laws, and governments have to ensure that this technology does not affect the rights of individuals. In this paper, GMOs and human rights were discussed. It went on to examine international laws that safeguard human rights. Afterward, the paper examined the impact of GMOs on our right to adequate food, health, informed choice, and a healthy environment. Finally, the paper gave a commentary and recommended some solutions that could help balance out GMOs and human rights.