



Legal protection of consumer against genetically modified foods

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Abstract:

Genetically modified foods and their protection by patent by the countries and multinationals that produce them, in order to achieve the highest rates of return, constitute a major risk for the environment in general and the health of consumers in particular, given the damage they cause. Therefore, countries bear a great responsibility to face this danger, to protect and valorize their genetic resources, and must find preventive and dissuasive mechanisms to provide the necessary legal protection to the consumer in particular against this technological advance.

Keywords: biological diversity; consumer; environment; food; genetic modification.

I. INTRODUCTION

The rise in global population and its increasing demand for food, along with the depletion of natural resources caused by their excessive exploitation and pollution, has led to the use of technology to fill the food gap. Despite accumulated agricultural intensification and the increasing use of means of production, the food deficit still exists. Many countries around the world have turned to genetic engineering to increase the rate of agricultural production at the lowest possible cost¹.

Since agricultural production is considered to be one of the most important resources on which countries depend to ensure their food security and develop their economies, technology has taken greater care in this area to bring about major developments, since biotechnology has come into play. Thanks to the innovative nature of the human mind, new genetically modified plant varieties have been created that did not exist before, possessing unique characteristics that result in abundant production, harvesting period, tolerance to drought, ability to resist pests and other characteristics.

Genetic engineering has thus become one of the challenges of the new millennium, as it aims to solve agricultural problems that traditional techniques have been unable to resolve, leading to conflicts between developing countries, developed countries and multinational companies over control of genetic resources. Then Bio Trade has emerged as a new type of activity in international trade and economics due to the accelerated pace of the scientific revolution in our time.

Genetically modified products and their patent protection by producing companies have different dimensions, as economics is the main driving force behind those who defend these products according to profit and loss calculations without regard to ethical considerations. Countries therefore have a major responsibility to protect and enhance the value of their genetic resources, which requires the creation of preventive and dissuasive mechanisms to provide the necessary legal protection for consumers against this technological progress.

We therefore ask what legal protection is provided to guarantee consumer safety and security with regard to genetically modified foods in the light of the economic explosion, which has created an unequal relationship between a weak consumer in need of protection and a professional economic operator seeking to make a profit at the expense of the consumer's health and that of future generations?.

To respond to this problem, it was necessary to examine the concept of genetically modified foods and the scientific position regarding them in the first section. As for the second section, I addressed the legal system designed to protect consumers against genetically modified foods at both international and national levels.

Section 1: Nature of genetically modified foods

Genetic engineering is a set of scientific methods and a process of renewal and innovation that includes the use of plants, animals and microbes as genetic resources to achieve abundant production at lower cost. Genetic engineering is now in the spotlight

¹ BEN HAMIDA Nabhat: Ensuring consumer safety and security from genetically modified foods, article published in the Journal of Legal and Political Studies - Issue 04, June 2016, p. 378.

of many international organizations and one of the most recent sciences that represent the next hope for solving many of the problems facing populations of the developing world, which, until the early 21st century, suffered from the burden of ignorance, poverty and disease, the trinity of underdevelopment. Most populations in the developing world live in agricultural areas where agriculture is their main activity. However, what is meant by genetic engineering and in particular by genetically modified organism? In the light of the widespread controversy surrounding genetically modified crops, both in scientific circles and among people, especially after the widespread application of this technology to agricultural crops, questions are being asked about the position of science on genetically modified foods.

Subsection 01: Concept of genetically modified organisms

Genetic engineering involves modifying the composition of the genes present in the cell nucleus, which are represented by deoxyribonucleic acid, responsible for transporting the organism's genetic information. These genes are replaced by others that may also come from completely different plant strains or from unrelated bacteria, viruses or fungi to give new traits². It is also defined as a technology that aims to bring about a natural change in the makeup of its genetic material (DNA), known as "gene technology", because thanks to this technology it is possible to transfer selected genes from one organism to another within the same species or even between different species.

Genetically Modified Organisms may be found in plants, animals, microorganisms and other living organisms, but what interests us in this study are genetically modified foods, particularly plant foods, which are based on the insertion of new genetic characteristics into a given type of plant using biotechnology, leading to improvements in the quality of agricultural products. It also means food produced from plants or animals in which genetic factors (one or more genes) are introduced from another living organism into the genetic makeup to be genetically improved to produce one or more new genetic traits beneficial to the latter³.

Genetic engineering, or more specifically: the technology of producing genetically modified organism by transferring genetic traits, is one of the modern technologies that goes through the following stages⁴:

- Finding an organism with the desired trait.
- Isolating the gene that represents the desired trait.
- Inserting the gene into the genetic material of the plant cell.
- Enabling the genetically modified cell to develop in the laboratory.
- Enabling the plant to reproduce in the field, producing a new plant containing a genetic trait that was not present before.

So the process of genetically engineering of a plant is based on the introduction of a gene that carries a desired trait in a plant that did not originally exist. If this gene is

² BOUJERADA Naziha, BERAYEK Tahar: Compensation for damages resulting from genetically modified products based on the rules of civil liability, an article published in *Al-Mishkat Journal in Economics, Development and Law*, Volume 01, Issue 06, Year 2017, p. 219.

³ French Ministry of Agriculture and Nutrition, website: <https://agriculture.gouv.fr/quest-ce-quun-ogm> visited on January 24, 2020 at 2pm.

⁴BOUJERADA Naziha, BERAYEK Taher: op.cit, p. 219.

introduced into the plant, it will be passed on to subsequent generations, and this is what lawyers refer to as the stability of the desired, added and genetically modified trait⁵.

Subsection 02: Scientific position on genetically modified plants

Genetic engineering has acquired great importance at the agricultural and economic levels, and genetically modified plants have been able to make greater progress than any other genetically modified organism. However, even if the scientific evidence is not conclusive, concerns remain about the effects of consuming genetically modified foods on consumer health and safety, as well as the potential dangers of gene migration to neighboring crops, which has created a lively debate between its proponents⁶ and opponents and made it a source of great division between these two camps, as explained below:

Paragraph 01: Proponents of genetically modified foods

Due to the rapid pace of the scientific revolution in our time, genetically modified foods have been developed and marketed as they offer tangible benefits to both producer and consumer. Proponents⁷ of genetically modified foods rely on a number of justifications, the most important of which are the following:

because these products are inexpensive and with increased nutritional benefit, some even see them as a mean of ensuring food security⁸, and they also aim to eliminate the problem of malnutrition from which the world's poorest countries suffer. The primary objective of genetically modified plants development is to improve and extend the way we produce natural resources for human consumption and to achieve higher levels of crop protection by improving their resistance to insect infection and viral diseases or by increasing their ability to tolerate pesticides of all kinds in a controlled manner, thus enabling the growth of new plants and the production of desired genetically modified foods.

Genetic modification has given rise to several types of food, including directly modified foods, such as bananas modified with vitamins, and genetically modified plant crops that contribute to the formation of foods, such as flour from processed maize. Finally, it is possible to obtain food from modified crops and eliminating the DNA from the food material. Take, for example, soya oil made from genetically modified soya beans, which breaks down the modified DNA with fatty acids. In addition, thanks to genetic engineering, scientists have been able to produce plants that can withstand drought if planted in dry desert areas, for example.

⁵ MAHYAOUI Fatima: The protection of genetically modified products, Master's thesis, Faculty of Law, University of Algiers, 2014, p. 54

⁶ For more details on this subject, see Ahmed Abu Arab, Genetic Engineering between Fear and Hope, Dar Al-Fawaed, Egypt, out of print, 2010, pp. 138 ff.

⁷ The trend in favour of genetically modified foods mainly involves the countries and multinational companies that produce them.

⁸ Food security is defined as: "providing all members of society with the quantity and quality of food required to meet their needs for an active and healthy life on a continuous basis". For more details, see the following reference Food Security in the Arab Countries, Chapter Ten, Axis One, p. 171, published on the following website: www.amf.org.ae/sites/default/files/econ/joint%20reports // visited on: March 15, 2022, at 7pm.

Based on the above, we conclude that genetic modification has been used primarily to help improve our lives, by raising the standard of agricultural products, particularly food, developing human healthcare and obtaining economic benefits for companies and countries investing in this field worldwide. It also aims to bridge the global food gap and achieve food security. However, despite all the advantages that genetic modification of foodstuffs brings, biotechnology is raising concerns among consumers. This has prompted the second trend to reject it outright.

Paragraph 2: Opponents of genetically modified organisms

Some countries have been very reluctant to accept genetically modified foods because of doubts about the dangers and risks to health and environment. Among those opposed to these organisms are the countries of the European Union and a number of developing countries. The most important arguments put forward by the opponents of genetically modified organisms include the following⁹:

The danger of genetically modified organisms lies in the fact that they do not guarantee biological safety because of the spread of these species with unknown risks: they reproduce and exchange genes with the local species of origin, and mutations can occur and be transmitted between species, thus posing a threat to the environment and humans.

Most genetically modified plants do not produce seeds, which makes agriculture dependent on companies producing genetically modified seeds, and therefore enables these companies to control the worldwide market, threatening countries' agricultural economies and eliminating their agricultural genetic wealth.

The risk of allergic diseases from genetically modified organisms. Studies in Europe have demonstrated the potential risk of allergic reactions and food poisoning among consumers. In fact, genetic modification techniques may lead to unexpected mutations in the genetically modified organism, which can involve the creation of new high levels of toxins in food and lead to the development of unknown and unpredictable allergies following the consumption of such foods.

Opponents - particularly those from European Union countries - believe that genetically modified organisms have a special nature, incompatible with conventional food products, because their negative effects have repercussions on health and the environment, given that there is a series of latent environmental risks that threaten the ecosystem, reflecting the urgent need for equal attention, particularly if these threats extend beyond human health to the ecosystem to which the existence of life on our planet is linked.

In this respect, we note that genetically modified crops present serious environmental damage which must be taken into consideration and which can be summarized as follows¹⁰:

⁹ BOUMEDIENE Mohamed and BOUKHNI Ahmed: Precaution against Genetically Modified Materials in the Context of Consumer Protection, article published in *Al-Ustad Al-Bahat Journal for Legal and Political Studies*, sixth issue, June 2017, p. 94.

¹⁰ Malika ZEGHIB & KAMRI Zina: Environment, sustainable agriculture and genetically modified products, article published in the *Journal of Economic and Administrative Research*, issue five, June 2009, p. 144.

- Scientists have confirmed that the transfer of a single gene to a plant could lead to an environmental catastrophe within 10 years due to the emergence of high-performance seeds that release numerous artificial genetic characteristics into the ecosystem, therefore causing an imbalance.
- Birds, insects and wind can carry genetically modified seeds or pollen from these crops to neighboring fields, which may result in genetic contamination and lead to the emergence of strong weeds that can be difficult to eradicate.
- Scientists believe that genetically modified crops will be more resistant to herbicides, leading to a doubling of herbicide use, which will have a serious impact on the environment and adversely affect human health.
- These crops will also have the capacity to produce their own pesticides, leading to the introduction of more pesticides into our food and fields than ever before.
- It is sometimes likely that a disorder will occur in the way genes work, so that mutant genes incorporated into plants do not function exactly as expected. This genetic modification could pose a major latent danger to humans, which needs to be carefully and precisely identified.

The negative aspects resulting from the use of genetic engineering techniques have prompted countries, international bodies and organizations to establish controls to ensure that the risks of human exposure to genetically modified organisms and products are prevented or reduced, as well as to determine safe levels for their treatment. The issue becomes particularly important when we consider that, despite studies and research regarding the risks associated with the circulation of genetically modified organisms and the use of genetic engineering techniques, there are still difficulties in accurately predicting their future dangers and damage. The need to ensure biosafety or to prevent biological risks due to genetic engineering and its products, in particular genetically modified foods, appears to be the most important environmental issue. In this respect, the international community and environmental and consumer protection leaders have called for the need to provide the necessary protection¹¹.

Section 2: Legal system to protect consumers of genetically modified foods

In the light of the divergent opinions on genetically modified foods, or so-called genetically modified products, between the companies producing these foods and the importing countries, and the uncertainty about the future of the world given the consumption of these foods, the value of legal protection for many from the potential dangers of these foods becomes apparent. Faced with the fear of their potential health and environmental risks, many countries have rushed to regulate this area by enacting legislation on the use, release and marketing of genetically modified products. (Subsection 1) The Algerian legislator followed this trend, as it was also concerned about consumer safety and security because of the economic and commercial relations it has with various countries that produce genetically modified foodstuffs (Subsection 2).

BOUTHALDJI Amina: The trading of genetically modified organisms in light of international trade rules, an article published in the Algerian Journal of Legal, Political and Economic Sciences, Volume 57, Issue 01, Year 2020, p. 156.

Subsection 1: Legal protection of consumers at international level

The international community and environmental and consumer protection authorities have insisted on the need to protect and regulate the production and marketing of genetically modified foodstuffs, taking into account consumer health and safety within the framework of international agreements concluded in this field, which has helped many countries to adopt legislation guaranteeing consumer safety against these diseases.

For example, two important agreements have been ratified to avoid the dangers of genetically modified foods, which we address in two paragraphs: prevention under the Convention on Biological Diversity (Paragraph 1) and prevention under the Cartagena Protocol on Biosafety (Paragraph 2).

Paragraph 1: Convention on Biological Diversity

The Convention on Biological Diversity, signed in Rio de Janeiro on 5 June 1992, came into force on 29 December 1993 and ratified by Algeria on 6 June 1995¹², is considered an important step towards protecting consumers against the dangers of genetically modified foods at international level.

The Convention aims to protect the planet's biological diversity by protecting species and ecosystems. It also seeks to establish the basis for the use of biological and technical resources. The main objective of the Convention on Biological Diversity is the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the use of genetic resources. The Convention on Biological Diversity, in its Article 8, paragraph (g), also calls on the Parties "to establish or maintain means to regulate, manage or control the risks associated with the use and release of living modified organisms resulting from biotechnology". While Article 19, paragraph 3, of the Convention on Biological Diversity sets out the need to establish an international protocol regulating the extent of risks associated with the use of living modified organisms resulting from biotechnology.

Some legal experts believe that the 1992 Convention on Biological Diversity which referred to the precautionary principle as part of its reminder of the fundamental principles of international environmental law, did not impose any obligations on countries, even though they were initially required to develop appropriate strategies for the use and preservation of biological diversity¹³. By stipulating this principle, the convention enabled many countries to use it to ban genetically modified plants on their territory, and it was also this convention that acknowledged peoples' ownership of the species that grow on their land, thus protecting developing countries from the plunder of their genetic resources that developed countries and their monopolistic companies aspire to use for their own ends.

¹² Presidential Decree no. 95-163 of June 6, 1995 ratifying the Convention on Biological Diversity, Official Gazette no. 32, published on 14 June 1995.

¹³ CHAMAMA Kheir Eddine: Countries' Duty to Preserve Biological Diversity against the Threat of Genetically Modified Plants, article published on <https://www.asjp.cerist.dz/en/down> Article/20/6/17/2833, visited on February 18, 2023, p. 14.

Paragraph 2: Cartagena Protocol on Biosafety

Cartagena Protocol on Biosafety was adopted under the auspices of the Convention on Biological Diversity, signed at the United Nations Conference on Environment and Development in Rio de Janeiro in 1992. The Protocol is considered an extension of international environmental law in both form and substance. The aim of the international negotiations, which took place within the framework of the Convention on Biological Diversity, was to introduce special rules and procedures to protect international trade from genetically modified organisms¹⁴.

The Cartagena Protocol (Spain, 29 January 2000) aims to clarify the 1992 Rio de Janeiro Agreement on the transboundary spread of genetically modified products. It includes prevention in its heading, since it is called the Cartagena Protocol on Biosafety, i.e. on biotechnological hazard prevention. The protocol took five years of negotiations between developing countries, developed countries and multinational companies. It was ratified by 119 countries, including 32 in Africa, 28 in Asia, 17 in Central and Eastern Europe, 22 in Latin America and the Caribbean and 20 in Western Europe and included three annexes. The first was about the procedures for submitting notifications, while the second annex included information on living modified organisms used directly as food or feed, and Annex III included a risk assessment.

The Cartagena Protocol requires Member States to take the necessary measures to improve the safety of products derived from genetic modifications and to ensure credibility with regard to potential threats posed by biodiversity, taking into account the risks it poses to consumer health and the exchange of biotechnologies between countries that make sustainable use of biodiversity.

In application of the Cartagena Resolution, the International Organization for Standardization has established standards for the sampling of living modified organisms and methods for their monitoring. A team of experts, within the framework of the protocol, has taken samples of products to monitor living modified organisms, based on sampling and monitoring methods in accordance with the standards specified by the Codex Alimentarius Commission¹⁵, in coordination with the International Organization for Standardization, the Organization for Economic Cooperation and Development and other relevant bodies.

Algeria ratified the Cartagena Protocol on Biosafety under Presidential Decree No. 04-170 of 8 June 2004¹⁶.

¹⁴ In the Protocol, the term "**living modified organisms**" refers to "**genetically modified organisms**", i.e. living organism (plants, animals, small organisms) capable of reproducing in the environment or transforming their genetic make-up, such as transgenic maize. Paragraph (h) of Article 3 of the Cartagena Protocol on Biosafety defines a living organism as "**a biological entity capable of transferring or replicating genetic material, including sterile organisms, viruses and viroids**", and paragraph (g) defines a living modified organism as "**any living organism that possesses a novel combination of genetic material obtained through the use of modern biotechnology**".

¹⁵ The **Codex Alimentarius**, or Food Code, is known as the world reference for consumers, producers and manufacturers of food products. It has been in force since 1961. It aims to establish unified international standards for food, in order to protect consumer health and encourage fair practices in the food trade

¹⁶ Presidential Decree No. 04-170 of 8 June 2004 ratifying the Cartagena Protocol on Biosafety to the Convention on Biological Diversity, adopted in Montreal on January 29, 2000, Official Gazette of the People's Republic of Algeria, dated June 13, 2004, No. 38.

It should be noted that the call made to all countries by the Convention on Biological Diversity the 1992 and the 2000 Cartagena Protocol on Biosafety to provide a legislative framework and to take the greatest precautions before embarking on the cultivation of genetically modified plants, has prompted a number of countries to enact environmental legislation and to stipulate the principles of prevention and precaution against genetically modified food, in order to protect the health and safety of consumers and the environment, including the Algerian legislator, which is explained in the next subsection.

Subsection 2: Legal protection of consumers at national level

Following Algeria's ratification of biosafety-related agreements, such as the Convention on Biological Diversity and the Cartagena Protocol on Biosafety, evidence of this should be found in the legislative system for consumer protection against genetically modified organisms. To this end, we will address the legal protection afforded to consumers under Law 09-03¹⁷ and its compatibility with genetically modified organisms (1st paragraph), then examine biosafety legislation in Algeria that supports consumer protection against genetically modified foods (2nd paragraph).

Paragraph 1: Legal protection embodied in the law relating to consumers

The Algerian legislator has sought to ensure adequate legal protection for consumers, and this was clearly embodied in Law No 09-03, considered to be a significant qualitative leap by the legislator towards greater attention to consumer and his protection through provisions that are clearer and more precise than its predecessor repealed Law No 02-89¹⁸. In the new law, the legislator has paid great attention to consumer protection in the food sector in general.

By extrapolating from the articles of Law No. 09-03 on consumer protection and fraud prevention, we note that the legislator has neither addressed nor mentioned genetically modified food, but has instead established a general rule in accordance with Article 09 of Law No. 09-03, which states: "**Under normal conditions of use or under other conditions reasonably foreseeable by the stakeholders, products released for consumption must be safe and present the protection that can legitimately be expected and must not harm the health, safety and interests of the consumer**".

In this context, the Algerian legislator has also adopted what is known internationally as the precautionary principle, according to which the law on consumer protection and fraud prevention provides for precautionary measures applicable to goods whose possession, circulation, sale or presentation for sale violates the provisions of Law. The goods subject to precautionary measures may be fraudulent products, whether the fraud is based on the nature of the goods, their type, their components, their essential characteristics, their source, their value, their quantity or other elements

¹⁷ Law No. 09-03 relating to consumer protection and suppression of fraud of February 25, 2009, Official Gazette of the People's Republic of Algeria No. 15, issued on March 8, 2009

¹⁸ Law No. 02-89, repealed, of February 7, 1989, relating to general rules for consumer protection, Official Gazette of the People's Republic of Algeria, No. 6.

specified by law. Goods subject to precautionary measures may also not conform to established specifications, whether they are manufactured locally or imported etc.¹⁹

The agents take these measures to ascertain their suspicions about products, which they consider, are causing harm to consumers. Article 53 of Law 09-03 states: **"The agents referred to in Article 25 of this Law shall take all precautionary measures to protect the health, safety and interests of consumers. To this end, they may temporarily or permanently refuse to allow imported products to cross borders, make deposits, seize, temporarily or permanently withdraw, destroy products and temporarily suspend activities, in accordance with the provisions of this law"**.

Law 09-03 on consumer protection and fraud prevention also gave the persons referred to in Article 25 the right to take and extract samples of products intended for consumption, through fraud control laboratories. These laboratories, under the supervision of the Ministry in charge of consumer protection and fraud prevention, are authorized to carry out analyses, tests and experiments in order to protect consumers²⁰, by taking samples of products suspected of having undergone defective genetic modification. Sampling is an administrative research procedure, used as an appropriate method of research and investigation in the field of quality control and fraud prevention, given that direct inspection can sometimes fail to detect infringements with the naked eye or even by means of measurements. Therefore, if anti-fraud officers have any doubts about the degree of conformity and suitability of products, they resort to the sampling method to carry out analyses.

This procedure does not apply to genetically modified organisms, which require precise tests and specialized laboratories. We may also be faced with the indirect introduction or dissemination of genetically modified organisms, so the precautionary approach mentioned in Law 09-03 is not sufficient to prevent genetically modified organisms. There must be special laws for such organisms that reinforce consumer protection rules.

Paragraph 2: Legal protection established under other legal texts

Algeria has enacted laws and ordinances relating to biosafety, including the following:

- Law No 05-03 of 6 February 2005 on seeds, seedlings and plant tenure protection²¹. The purpose of this law is to define the conditions for the approval, production, multiplication and marketing of seeds and seedlings used in the protection of plant production, as well as the protection of new plant varieties²². It should be noted that despite its importance, this law on seeds, seedlings and the protection of new plant varieties makes no mention of genetically modified plants.

¹⁹ BEN BAALACHE Khalida: The protection of consumers in Algeria against the dangers of tainted and genetically modified food, article published in the Journal of Legal and Political Studies, issue 5, volume 01, January 2017, p. 312.

²⁰ See Articles 57 and 59 of Law 09-03 on consumer protection and fraud prevention, op.cit.

²¹ Law 05-03 dated 27 Dhu al-Hijjah 1425, corresponding to February 6, 2005, relating to seeds, seedlings and plant tenure protection, Official Gazette No. 11, issued on February 9, 2005

²² Article 1 of law no. 05-03, op.cit.

- There is also Ordinance No. 03-07 of 19 July 2003 on patents for inventions²³, which prohibits patents for plant varieties or animal breeds, as well as essentially biological processes for obtaining plants or animals; or inventions whose implementation on Algerian territory would be contrary to public order or morality, or would harm the preservation of plants or seriously undermine the protection of the environment²⁴. However, it did not stipulate genetically modified food products either.

From a legal point of view, Algeria has begun to lay the foundations for national legislation on the transfer, handling and use of genetically modified organisms likely to have adverse effects on the conservation and sustainable use of biodiversity. On this basis, the Ministry of Agriculture and Rural Development promulgated the first regulatory text in Algeria, consisting of Ministerial Order No. 910 of 24 December 2000²⁵, which prohibits the import, distribution, marketing and use of plants that have been genetically modified. The second article of this order specifies what is meant by genetically modified plant material: **"any living plant or living part of a plant, including eyes, claws, grafts, tubers, rhizomes, cuttings, buds, shoots and seeds, intended for dissemination or reproduction and which has undergone artificial transfer of a gene from another individual belonging to a different species, or even of a bacterial gene, carried out under conditions ensuring stable perpetuation of the new trait governed by this gene in the progeny"**.

Article three of the Ministerial Order also stipulates: **"scientific institutes and research bodies may, for analysis and research purposes, at their request, be authorized to introduce, hold, transport and use genetically modified plant material, under conditions to be defined by decision of the Minister of Agriculture"**. This means that scientific institutes and research bodies for analysis and research purposes may, at their request, be approved by the phytosanitary authority, represented by La Direction de la Protection des Végétaux et du Contrôle Technique of the Ministry of Agriculture and Rural Development, "to introduce, hold, transport and use genetically modified plant material".

Given the high cost of importing seeds, cereals and pulses, suspicions about the entry and consumption of genetically modified crops are admissible, as it is sufficient for the importer to present a certificate proving that the product is free from genetic modification to obtain a license. However, the application of this decision faces a number of problems, in particular the fact that control is not practically possible. In fact, it is difficult to apply this legal text, given that it is impossible in Algeria to know whether this material is the result of a genetically modified organism due to the lack of technical and scientific means and of a body specialized in all fields to control imports from other countries to Algeria. As an example, Algeria has no specialized laboratories to control and test genetically modified materials.

Moreover, a draft law was presented by the Ministry of Land Planning and Environment to address the circulation of biological resources and the control of genetically modified organisms. It takes into account the risks of using modern

²³ Ordinance No. 03-07 of July 19, 2003 regarding patents, Official Gazette issued on July 23, 2003, No. 44

²⁴ In accordance with Article 08 of Ordinance 03-07 on patents, op.cit.

²⁵ Official Gazette of the People's Democratic Republic of Algeria No. 2, issued on January 7, 2001

biotechnologies on the health of Algerian consumers²⁶. This was followed by an express ban on the inclusion of genetically modified varieties in the official catalogue setting out the technical characteristics of species and varieties of seeds and seedlings, in accordance with Article 05 of Executive Decree 11-05²⁷.

In 2014, Law 14-07 on biological resources²⁸ was enacted. It includes a set of mechanisms to protect biological resources and enshrines the fair and equitable sharing of biological resources, the benefits resulting from their use and the knowledge associated with them. These mechanisms take the form of the creation of a national biological resources authority in charge of granting licenses to applicants. The law also created a national public register of biological resources with the aim of preserving and maintaining them. However, the law remains static, as 9 of its 24 articles have been suspended pending the promulgation of decrees setting out the terms and conditions of its implementation.

Conclusion

Nowadays, biotechnology and genetic engineering are a tangible and unavoidable reality, which is why this century is known for biology and bioculture, just like the previous century known as the century of physics and the atom. Genetic engineering has played a leading role in the agricultural sector, to improve food production in terms of quantity and quality at the lowest possible cost, in the light of the serious food security problems from which the majority of third world countries are suffering today. However, it has so far been established that the effects resulting from the consumption of genetically modified foods have not been definitively determined from a scientific point of view. One group supports the production of genetically modified crops because of the intensity of the crops they grow. Given the strong demographic growth, it offers an advantage that traditional agriculture could not, and which served the interests of the major powers and multinationals. While another group believes that the effects of this modification only appear after several years, creating potential dangers. So this process should be excluded to protect consumer health. There is a need for the countries now to protect the environment from pollution resulting from over-exploitation of natural resources, to avoid using genetic engineering to cover up food shortages, the danger of which is still possible. In addition, developing countries only have their pristine nature and organic agriculture, as they are their main bet for the future. Even if they have other raw materials, the latter are by nature non-renewable, and all this calls for caution and non-adventurism.

²⁶ SID OMAR Amna, KHATIR Massaoud: African interest in the circulation of genetically modified products as one of the manifestations of the development of legislation in this field, article published in the African Journal of Legal and Political Studies, Ahmed DRAIA University, Adrar - Algeria, Volume 05, Issue 02, Year December 2021, p 105.

²⁷ Article five of Executive Decree no. 11-05 of 10 January 2011 amending and supplementing Executive Decree no. 06-247 of 9 July 2006, which sets out the technical characteristics of the official catalogue of types and varieties of seed and seedlings, the conditions for its conservation and publication, and the terms and conditions for their registration, specifies that "**any registration or deletion of the Official Catalogue of Types and Varieties shall be done by decision of the Minister of Agriculture. Modified varieties may not be registered in the register**", Official Gazette No. 02.

²⁸ Law No. 14-07 of August 9, 2014 relating to biological resources, Official Gazette No. 48, issued on August 10, 2014

Organic agricultural production may represent the most important competitive advantage for Third World countries, including the Arab countries. We know that the genetic modification of various food products is constantly increasing, under the influence of multinational companies whose only interest is to obtain high profit rates for their own benefit. However, a good food culture and the aspiration to a healthy and diverse environment, avoiding the consumption of genetically modified products, remain the ideal solution for preserving biodiversity and the environment and guaranteeing consumer health and safety. What's more, the success of any system, regardless its legislative or judicial nature, requires that people who fall within its provisions become fully conscious. Consumers must therefore be made aware of their rights and of how to obtain them, and defend them as a first priority.

As for Algeria, in terms of the legal system, we note that practical reality has revealed the deficiency that exists in the legal rules relating to consumer protection against the dangers of genetically modified foods, despite Algeria's ratification of the Convention on Biological Diversity, the Cartagena Protocol and the agreement for the creation of the International Centre for Genetic Engineering. The legal rules supporting consumer protection against genetically modified organisms remain incomplete and very weak in light of the challenges posed by international trade, thus leaving Algeria vulnerable to all the possible risks arising from genetically modified foods. A legal system needs to be created to control the management and entry of these products, to ensure their monitoring and to estimate the financial values available, taking into account the size of the countries and multinational companies producing these products. As a result of all the above, we can see that genetically modified foods are the living embodiment of the collision between development and the environment, and are therefore far from a sustainable development that seeks to reconcile them. Consequently, all the nations of the world in general and the Algerian legislator in particular must pay close attention to this issue in order to avoid the dangers of genetically modified foods both for the environment and for the consumer, by reconsidering the legal system pertaining to consumer protection, all with a view to achieving overall sustainable development and providing the necessary legal protection for the consumer against these genetically modified products.

- **Referrals and references:**

A - Laws and Decisions:

- Ordinance No. 03-07 of July 19, 2003 regarding patents, Official Gazette issued on July 23, 2003, No. 44.
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