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## SOCIAL RESPONSIBILITY RESEARCH FOOD MANUFACTURER AS IMPORTANT FACTOR INCREASING QUALITY OF PRODUCTION

Об'єктом дослідження є соціальна відповідальність виробників за якістю продуктів харчування. Одним з найбільш проблемних місць є те, що соціальна відповідальність веде вбік від фундаментальної економічної ролі бізнесу. Одні стверджують, що це не що інше, як прикрашення дійсності. Інші говорять, що це спроба підмінити роль уряду в якості контролера потужних мультинаціональних корпорацій.

У роботі використано загальнонаукові методи пізнання (аналіз, синтез, абстрагування), методи узагальнення, системного аналізу, групування та порівняння, та метод експертних оцінок.

У ході дослідження показано, що споживачі не мають можливості перевірити продукти харчування на наявність в них генетично модифікованих компонентів через те, що у країні недостатньо лабораторій для визначення генетично модифікованих організмів (ГМО). На основі чого автор дослідження робить висновок, що в Україні критично необхідно створювати сучасні лабораторії для дослідження вмісту ГМО. Рекомендовано для визначення концентрації ГМО у продуктах харчування використовувати ПЛР (полімеразна ланцюгова реакція) – експериментальний метод молекулярної біології. Це дозволяє добитися значного збільшення малих концентрацій певних фрагментів нуклеїнової кислоти (ДНК) в біологічному матеріалі (пробі) – з детекцією в режимі реального часу. Такий метод дозволяє специфічно визначити вид ГМО і визначає його концентрацію з достовірністю як мінімум 99,95 %.

Також дані рекомендації щодо заходів, які необхідно провести у державних органах для забезпечення якості продуктів харчування в рамках контролю рівня ГМО:

– Державний комітет України з питань технічного регулювання та споживчої політики повинен визначити перелік харчових продуктів для обов'язкової перевірки на наявність ГМО.

– Товариство по захисту прав споживачів ініціювати встановлення персональної відповідальності керівників підприємств за порушення Закону про обов'язкове інформування громадян про наявність у продуктах харчування ГМО.

**Ключові слова:** маркування продуктів харчування, соціальна відповідальність підприємств-виробників, інформування споживачів про наявність ГМО.

### 1. Introduction

On December 17, 2009, the Verkhovna Rada of Ukraine adopted the Law on Mandatory Information of Citizens on the Availability of Genetically Modified Organisms (GMOs) in Foodstuffs. According to the resolution of the Cabinet of Ministers of Ukraine, the maximum concentration of GMOs is established, below which the marking «Without GMOs» is set is 0.9 %. In Ukraine, as in the European Union, a barrier of 0.9 % for GMOs is established, in which it is considered that the product does not contain GMOs [1]. Since 2010 almost all food products have been labeled «Without GMOs». Therefore, it is relevant to study the objectivity of marking food products for the presence of genetically modified organisms and the conscientiousness of the implementation by the manufacturing enterprises of the Law on mandatory informing citizens about the availability of GMOs in food.

### 2. The object of research and its technological audit

The object of research is the social responsibility of producers for the quality of food.

Social responsibility is the concept according to which organizations take into account the interests of society, taking responsibility for the impact of their activities on firms and other stakeholders in the public sphere. This obligation goes beyond the statutory obligation to comply with legislation and suggests that organizations voluntarily take additional measures to improve the quality of life of workers and their families, as well as the local community and society as a whole.

One of the most problematic places is that social responsibility leads away from the fundamental economic role of business. Some argue that this is nothing but an adornment of reality. Others say that this is an attempt to replace the role of government as a controller of powerful multinational corporations.

Business and organizations are influenced by many factors. Their relationship with the society or the environment in which they work is a critical factor for effective interaction.

### 3. The aim and objectives of research

The aim of research is investigation of the problem of food testing for the presence of genetically modified

organisms and the implementation of the Law on Mandatory Information of Citizens on the Availability of GMOs in Foodstuffs.

To achieve this aim, it is necessary to perform the following tasks:

1. To conduct an analysis of the objectivity of food labeling for the presence of genetically modified organisms.

2. To investigate the conscientiousness of the implementation by the manufacturing enterprises of the Law on mandatory informing citizens about the availability of GMOs in food.

#### 4. Research of existing solutions of the problem

In the countries of the European Union, the relationship to genetically modified foods is somewhat different. Thus, scientists [2] in their studies indicate that there is a ban on the cultivation of genetically modified crops and the production of foods with genetically modified components. The authors of works [3–5] note that such moratorium only applies to products produced in the EU, and does not apply to imported products.

It is reported in [2–7] that in the countries of Africa the last five years do not allow the import of products with genetically modified components onto their territory.

In particular, the paper [8] is devoted to the adoption in the UK of the use of three genetically modified products: tomatoes, soybeans and corn. But the author of [9] notes that it is necessary to ban the sale and consumption of any fresh, genetically modified products.

New GMO products are evaluated by a special committee. In addition to experts, this committee includes three representatives of the public: two representatives of consumers and one advocate of morality [2, 7].

The authors of [3, 4, 6] have shown that in some countries, for example, in China, GMO products are illegally produced and sold to other countries. In Russia, the production of genetically modified soybeans, potatoes, corn and sugar beets is allowed.

An alternative solution to the problem, set forth in [2, 4, 5], which foresees in the EU countries the ban on the production and import of baby foods containing GMOs. If the product contains genetically modified DNA or protein, a special mark on the label should inform the EU citizens about it. The product is not labeled if, in the opinion of the authors of the works [2, 5], if the content of the GMO is below 0.9 %. But before entering the market, in the EU countries any new product should receive a recommendation for sale or use [7, 8].

The results of the analysis [10, 11] lead to the conclusion that, at the moment, the international society has come to the conclusion that a product that contains GMOs should be the most equivalent of the same product without genetically modified components.

#### 5. Methods of research

The following methods and methods of investigation are used in the work:

– general scientific methods of cognition (analysis, synthesis, abstraction) – for disclosure of the content and essence of the concept of «genetically modified organisms»;

– generalization – definition of the purpose of using genetically modified organisms;

– system analysis – to determine the main risks of using genetically modified organisms in food;

– groupings and comparisons – to study the state and trends in the development of products with genetically modified components in different countries of the world;

– method of expert assessments – to determine the influence of GMOs on humans and the environment.

#### 6. Research results

In order to investigate the problems of food testing for the presence of genetically modified organisms, it is necessary to determine what is called genetically modified organisms or in abbreviated form – GMOs.

GMOs (genetically modified organisms) are living organisms (animals, plants, bacteria and viruses) whose genotypes have been artificially altered by genetic engineering techniques to provide them with certain useful properties [6]. For example, genes responsible for resistance to pests, herbicides, unfavorable growth conditions can be introduced into plants. Or in the genome of animals, it is possible to introduce modifications that allow to increase the content of useful proteins in milk.

GMOs are organisms whose DNA is altered in a way that can't be achieved in nature. GMOs can contain DNA fragments from any other living organisms.

Today, genetically modified crops are grown in many countries. Such as Argentina, Australia, Canada, China, Germany, Colombia, India, Indonesia, Mexico, South Africa, Spain, USA. Two-thirds of all genetically modified crops in the world are grown in the United States. In the US, labeling of products with GMOs is not mandatory [3].

The purpose of obtaining such organisms is improvement of the useful characteristics of the original donor organism in order to reduce the cost of products. For example, increasing the plant's resistance to pests, herbicides and diseases. Apparently, almost everyone heard about such plants. That only there is a known potato of the American company Monsanto to which the Colorado beetle is indifferent. This could be called progress, if not for one «but». Today, the technology of creating GMOs is so imperfect that it can be the main source of biological and environmental risks for humans and the environment.

When using GMOs, there are three groups of risks:

1) negative impact on the human body (allergic and toxic reactions, long-term use of foods with genetically modified components can cause a change in organs, in particular the mucosa of the intestinal tract);

2) on the environment (occurrence of vegetative weeds, contamination of research sites, chemical contamination, reduction of genetic plasma, etc.);

3) global risks (activation of critical viruses, economic security).

However, at the moment there is no absolute evidence of both the danger and the safety of GMOs. And the impact on the human body can be determined so far only theoretically [3].

Consumers are trying to impose an opinion that GMO can be a harmful substance in food products. And buyers, choosing products in stores, sigh with relief, seeing on the package the cherished inscription «Without GMOs». But none of them can be sure that there are no GMOs or

other harmful substances in this food product. Verify the reliability of the composition of products only in specialized laboratories.

Laboratories for the analysis of the content of GMOs in food products in the State Committee of Ukraine on technical regulation and consumer policy in Ukraine, only four – in the NP «Ukrmetrteststandard» (Kyiv), the L. I. Medved's Institute of Ecological Hygiene and Toxicology (Kyiv), the National University of Bioresources and Nature Management of Ukraine (Kyiv) and the State Enterprise «Vinnytsiastandartmetrolohiya» (Vinnitsa) [6]. Money from the state budget to check the products for the content of GMOs is not allocated. All research is carried out by producers at their own expense, and therefore the results of inspections, including information about the products in which GMOs were found, belong to manufacturers and are not made public. Producers in 80 % of cases test not the product they produce, but only the raw materials for their production. Therefore, most food is consumed, not tested. Consumers, on the other hand, are not able to check the products for GMOs themselves, because such studies are not cheap. One test costs 625 UAH.

But, it should be noted that more and more companies voluntarily and at their own expense check the content of GMOs in their products or the raw materials they buy. This is evidenced by the data (Table 1), provided by the central laboratory of Ukrmetrteststandard in Kyiv.

**Table 1**

Number of food samples tested from 2015 to 2017

Year	Number of samples	Number of GMO in the samples
2015	1846	403
2016	2127	382
2017	3841	412

From the data of Table 1, it can be concluded that the quantity of products or the volume of raw materials that are being investigated becomes larger, and the quantity of GMOs detected in them is less. Of course, this should not necessarily mean that the content of GMOs decreases in products, they are not checked. In general, the researchers acknowledge that very few products are checked anyway [4].

Experts argue that the presence of a mark does not guarantee the buyer no undesirable component in the products. And they emphasize a lot of other dangerous contaminants in Ukrainian products, the harmfulness of which has long been proven, and which should be guarded no less, and maybe even more than GMOs. However, on the part of the state and various institutions that would control this issue, such an interest in other dangerous components of domestic food products, like GMOs, is not observed.

Experts say that today there are so many different toxicants in food products – pesticides, nitrates, heavy metal salts, radionuclides. But everyone concentrated their attention only on GMOs, although this is only one of the possible sources of negative impact.

There are pollutants formed during the manufacture of the product, for example, hydroxymethylfurfural – a product of the sugar decomposition, it has a carcinogenic effect. This substance can be formed in products containing natural sugar, for example, in the production of juices, including baby food, or with honey. Honey is

the only product that is controlled in Ukraine for the maintenance of this substance. Although, unlike juices, honey is not consumed in liters. But the content of this substance in juices is in no way controlled.

There are also substances with anthropogenic origin, for example, benzopyrene – a very strong mutagen and carcinogen, is a threat to human health. It can be in sunflower oil. However, only manufacturers who manufacture products for export check their products for the presence of benzopyrene. And some manufacturers, who produce sunflower oil exclusively for the domestic market, do not even know that there is such a pollutant. Because in Ukrainian standards such norm as there was not, and no.

Instead of controlling the content of really harmful substances, the Ukrainian legislation provided for norms that are not important, given the safety of food [5].

## 7. SWOT analysis of research results

*Strengths.* The positive aspects of the study include:

- ensuring long-term prospects for the society development;
- creating opportunities to influence the changes in society;
- assistance in solving social problems, including employees of the organization;
- formation of the morality norm in the organization;
- ensuring the establishment of friendly relations between entrepreneurs (managers) and other members of society, etc.;
- changing the needs and expectations of the general public;
- availability of resources to assist in solving social problems.

*Weaknesses.* The negative aspects of research include:

- violation of the principles of profit maximization;
- increase in the cost price of production in connection with increase in expenses for social needs;
- the inability to ensure a high level of accountability to society;
- lack of ability to solve social problems, that is, inability to meet social needs, non-professionalism;
- application of social responsibility only for advertising purposes.

*Opportunities.* Opportunities that the enterprise receives in observance of the principles of social responsibility:

1. Profit in perspective.
2. It is better to participate voluntarily if possible, than compulsory according to the «law».
3. Preparation of labor resources.
4. Training and staff development.
5. Positive image of the company.
6. Diversification of business.

*Threats.* Non-compliance with the principles leads to the following threats:

- negative impact on the human body (allergic and toxic reactions, long-term use of foods with genetically modified components can cause a change in organs, in particular the mucosa of the intestinal tract);
- on the environment (occurrence of vegetative weeds, contamination of research sites, chemical contamination, reduction of genetic plasma, etc.);
- global risks (activation of critical viruses, economic security).

## 8. Conclusions

1. It is shown that consumers do not have the opportunity to test food for the presence of genetically modified components in them, because there are not enough laboratories in the country to determine genetically modified organisms (GMOs). Based on which the author of the study concludes that in Ukraine it is critical to create modern laboratories for the study of GMO content. It is recommended to use PCR (polymerase chain reaction) – an experimental method of molecular biology – to determine the concentration of GMOs in food products. This allows a significant increase in the small concentrations of certain fragments of nucleic acid (DNA) in a biological material (sample) – with real-time detection. This method allows to specifically determine the type of GMO and determines its concentration with a certainty of at least 99.95 %.

2. These recommendations on the measures that need to be taken by the government to ensure the quality of food under the control of the level of GMOs:

- The State Committee for Technical Regulation and Consumer Policy of Ukraine must determine the list of food products for compulsory testing for GMOs.
- The Society for the Protection of Consumer Rights to initiate the establishment of personal responsibility of enterprise managers for the violation of the Law on the mandatory informing of citizens about the availability of GMOs in food.

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