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BIOECONOMY AND FOOD SAFETY SECURITY

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Abstract: *Nowadays, the health of a nation, can be related in close connection with the most modern concept - bioeconomy. Bioeconomy integrates in a natural manner organic farming, the agricultural practices that becomes available to consumers, attracting more interest, "bio" food products much healthier and more natural compared with the products obtained by intensive modern agriculture.*
At the same time, organic farming is an alternative to modern, intensive, intensive, economically expensive farming, with an important role in providing healthy food for the population, protecting the environment and preserving the natural balance.
The development of agriculture at the beginning of the third millennium cannot be separated from the major problems of humanity today, among which the most important are the demographic increase, the energy crisis and material resources and the protection of the environment.
"Bioeconomy" is a type of economy that uses biological resources in the soil and sea, as well as waste, as raw materials for food, feed and industrial and energy production.
The European Union's bio-economy already has a turnover of approximately 2000 billion EUR and provides jobs for over 22 million people, or 9% of the total EU employment.
EU bio-economy includes sectors such as agriculture, forestry, fisheries, food production, paper and paper pulp, as well as a part of the chemical, biotechnology and energy industries. It is estimated that each euro invested in EU-funded research and innovation for the bio-economy will generate 10 EUR of added value in the bio-economy sectors by 2025.
The paper presents some aspects of bioeconomy with an emphasis on the necessity of bio products, food security and food security of a nation, in close connection with the health and security of the food resources.

Keywords: *bioeconomy, organic, food safety, security, resources.*

1. INTRODUCTION

Bioeconomy is based on life sciences, agronomy, ecology, food science and social sciences, bio and nanotechnologies, information and telecommunication technologies and engineering.
Global demographic growth after the latest research developed by the European Commission will foresee a 70% increase of food demand and an actual doubling of meat consumption. All this requires the definition of a global, strategic approach by developing a knowledge base that incorporates avant-garde sciences and last but not least local and implicit knowledge. On the basis of this knowledge, production and consumption patterns will develop and the development of healthier and sustainable food regimes.
The European Union produces annually, through the food industry and households, about 90 million tones food waste, a statistic that does not include fisheries and agriculture losses. Thus, in order to ensure food safety and security, it is absolutely necessary to ensure the efficiency of the food supply chains in line with the Roadmap to a Resource Efficient Europe and the Blue Growth initiative.
The development of agriculture and the food industry at the beginning of the third millennium cannot be separated from the major problems of mankind today, among which the most important are demographic growth, the energy crisis and material resources and the protection of the environment.
Conventional agriculture has proven to be a cost-intensive, energy-intensive system with great potential for degradation of the environment and human health.
In order to protect the environment, to preserve the natural balance, to maintain soil fertility and to obtain biologically and hygienically valuable agricultural products that do not affect the health of the consumers, specialists in the field plead for the extension of organic farming.
Organic farming is an alternative to modern, intensive farming. It is an agricultural system that puts in place all possible means and tools of work that ultimately lead to high-quality, healthy, agricultural products without

resorting to chemical synthesis, respecting "the laws of nature", "the laws of life" in order to ensure the protection of consumers and the environment and the safety of food security.
Organic Farming is the production of healthy crops and animals produced in accordance to the principles and rules of organic production.
The food industry is constantly growing, facing increasingly challenging market challenges, competition and consumer demands. The general tendency is towards eating natural, low-processed, fresh foods with high nutritional intake.

2. THE NECESSITY OF ”BIO” PRODUCTS

Excessive demographic growth (9 billion people in 2050) and depletion of natural resources call for a new approach to food safety and security through massive investment in research and innovation, and the development of markets and competitiveness through a sustainable increase in primary production through conversion waste streams in added-value products.
Through its cross-sectoral nature, bioeconomy offers the unique opportunity to tackle the current challenges of today's society such as food security, the production and consumption of bio-products, limited natural resources, and climate change while ensuring sustainable economic growth.
Intense land use, using chemical synthesis, has led to man poisoning, weakening his health. Thus, there has been an alarming increase in the frequency of degenerative diseases (cancer, aggressive allergies, serious skin diseases, etc.). At the same time, epidemics and endemics occurred in intensively-grown animals (salmonella, tuberculosis, cannibalism) as well as new viruses and bacteria due to unnatural feeding (BSE Virus).
Nutritionists closely related to the basic concepts of bioeconomy show that people's health depends on the use of complete vital nutrition, clean, unpolluted water and air, and respect for the order law of life.
Complete vital nutrition or so-called "living healing food" is that food whose vital components - proteins, carbohydrates, vitamins, etc. - have not been denatured or destroyed by pollution or inappropriate processing.
Research in the field has shown that the only sources of complete vital nutrition are spontaneous flora and organic farming, and that the health and food safety of a nation beyond the organic farming system cannot be conceived. It has also been concluded that the ratio of the biological value of plants in spontaneous flora, biologically grown and conventional crops is 10: 4: 1. For this reason, consumers prefer organic products, the so-called "bio" products, their demand growing rapidly and continuously.
Bioproducts and bioenergy can be biodiverse of traditional products or new products with completely new and innovative functionalities and potential for the whole range of markets.
In order to develop this potential, it is necessary to continue to develop clear and unambiguous product standards and be accompanied by sustainability criteria at European and international level.
Organic products obtained by ecological agriculture are healthier, more "natural", more tasty and, although sometimes not particularly commercial, consumers are willing to pay a higher price for their biological quality.
In ecological agriculture, a particular emphasis is placed on the biological quality of the finished products obtained, which is given by a complex of factors, such as: the genetic characteristics of the variety, the hybrid of plants or the breed of animals in interaction with the environmental factors (pedoclimatic conditions) and the used technology (fertilization and soil cultivation, pest, animal pest and plant pest control techniques, animal care, etc.).
Thus, using natural organic fat in the harvest, a lower amount of nitrate was found, which gives it a higher, higher biological quality compared to nitrogen fertilizer fertilization. Using exaggerated doses of nitrate fertilizer weakens the resistance of plants to some diseases (manne, flouring), which depreciates crop quality, fruit coloration is uneven, useful substances accumulate in smaller quantities, the storage period becomes shorter because of their nitrates content, as well as groundwater and surface water. Thus, high levels of nitrates have been highlighted in vegetables, fruits, wines, water and exceeded the admissible limits.
It has also been found that animals prefer feed from organically fertilized land, manure or biodynamic compost, with higher weight gains, and milk and dairy products obtained from these animals have special qualities, the feed being devoid of nitrates.
With regard to pesticide residues, the guarantee of not using pesticides by the farmer ensures a low probability of finding them in products.
Efforts of organic farmers must necessarily be continued by organic food processors so that they reach the mass of undistorted consumers. This is because a final product called "biological" must contain 95-100% raw materials and ingredients from organic farming. Exceptionally, the certifying oragnisation may also approve raw and auxiliary raw materials from conventional agriculture but not more than 30%.
If we analyze the price of "bio" products, we find out that it is higher than the one obtained by conventional agriculture, but if they are better quality and meet the demands of consumers, the price does not matter. Thus, if consumers were asked about the reasons why they buy and use these products, they are primarily responsible for being healthier, more natural, tastier and environmentally friendly by their way of production.

Biological farm for animal breeding

One of the principles of organic farming says "the farm is a unit, a balanced organism." In order to achieve a more natural balance and more stable relations, the narrow specialization and unilateral exploitation of these farms must be as heterogeneous as possible, that is to include as many species of plants and animals as possible. This fact is the more necessary since organic farming is based on the preservation of living organisms in the soil through rational crop rotation, using crop techniques that appeal less or no to chemical synthesis and by keeping as much as possible of organic matter in soil.
Analyzed from this point of view, agricultural farms must be considered as living organisms within which there is a certain balance which is a guarantee for obtaining good, large, healthy and environmentally friendly products.
Given the importance of livestock in the setting up and management of organic farms, account must be taken of the fundamental principles of organic livestock breeding which also determines the growth technologies used. Thus, at the basis of the biological growth of animals, the following should be taken into account:

- respect for the animal;
- the growing technologies used to be in accordance to the natural claims of the species;
- correlation of the number of animals with the available land area;
- it is forbidden to coexist in the same farm species of animals raised in organic and conventional regime.

For this purpose, livestock farming must be done on an extensive basis. Animals must be born and reared on the farm (except for day-old chicks and calves under 7 days) and if this is not possible, it is allowed to purchase on conventional farms but it can not exceed 10% of the total number of animals existing in the enterprise.
Also, it is important to mention that those animal loft that are not made on the ground are forbidden. Animals are maintained in a mixed system where shelters must meet their microclimate needs to provide the necessary comfort. In this extent, the minimum standard areas per head of the animal are mandatory, the bedding will be made of natural materials only, natural light (artificial lighting will be regulated by control organs), protection against rains and winds, and water and air will be fresh. Stabulation without bedding is not recommended. As soon as the climatic conditions allow, the animals are taken to the pasture, and the holding cannot exceed 2 UVM / ha or its equivalent for other species.
Animal feed is mainly provided using feed grown under the rules of organic farming. At least 50% of the feed must come from this type of holding, and for pigs and poultry must not be less than 40%. Of the dry matter ingested daily, the silo is limited to 50% and the concentrates are limited to 30% of the total daily ration. Of these, by derogation, 10% can also come from conventional farms, but only for ruminant feed and in no case OGM products.
In cattle feed process are admitted no animal protein feed, except for milk protein, is allowed, and for pigs only fodder are forbidden. For pigs destined for cutting, during the finishing period, feeding is done only with feed of biological nature, while for poultry, up to 10% of the feed can also come from conventional farms.
Reproduction of animals will only be done naturally, although there are European regulations (2092/91) stating that artificial sowing as castration is authorized, and even for bovine animals even ecarding. Also, shortening of tails in lambs is allowed as ring marking. Instead, other mutilation, embryo transfer and hormonal treatments are forbidden.
As regards animal health, disease control will be ensured using phytotherapeutic or homeopathic methods. In order to save the animals or to avoid their suffering, the use of synthetic drugs is acceptable - only 2 treatments per year. These treatments will double the waiting period, up to delivery, compared to the legal period.

Animal health and food safety

Food security is one of the most debatable and sensitive issues of the present times. Through its food safety policy, the European Union only pursues the protection of consumers by guaranteeing the smooth functioning of the single market.
The fundamentals of policy focus on the concept of traceability, traceability seen as a double perspective: input - feed; outputs - primary production, processing, storage, transport and retailing of products. All food legislation applies to all stages of the food chain. Food businesses must:
- guarantee the traceability of food, feed and food producing animals at all stages of production and distribution;
- immediately withdraw the food or feed from the market or recall the products already supplied if it is considered to be harmful for health;
- to inform the authorities.

Where a hazard is identified, precautionary measures may be taken in accordance with a high level of health protection.
Communication of measures aimed at restricting or withdrawing from the market, food control measures or rejection of a batch of products rests exclusively on the RASFF Food and FEED Safety Alerts System.
The results obtained in organic livestock farming systems highlight that while they provide better conditions for obtaining uncontaminated animal products and animal welfare, they also represent a potential risk of much more infectious and parasitic disease compared to with conventional livestock systems.
This increases the risk of zoonoses, thus communicable diseases and toxic contaminants in the organic livestock farming systems and the possibilities of limiting these risks. In this respect, researchers from the Netherlands have highlighted aspects of Toxoplasma gondii infection in pigs and Compylobacter in hens raised on organic farms in Finland, although no infected white whites or yolks have been found. Although the authors concluded that, despite the presence of pathogens, the risk to consumers was reduced, a management system that reduces the risk of introducing or accumulation of infectious agents in organic farms is required, as bio-security has been and remains a problem major on organic farms.
A major problem for free-range livestock systems, including ecological systems, is environmental pollution. Studies on organic chickens showed that the eggs from this system showed higher levels of dioxin than those from chickens reared in other systems, although most of them had accessible levels below the EU limit (3pgTEG / gram of fat).
Since the most important factor contributing to the increase in the level of dioxin in the egg was the access to soil and the quantity of ingested soil, the necessity of covering the soil with sawdust or maintaining a grassy soil, thus limiting the intake of soil.
Another problem caused by environmental pollution and animal biosecurity is the reduction of heavy metals in organic livestock products to avoid increasing their level in the food chain.
The main source of heavy metals (Zn, Pb, Cd, Cu etc.) on farms is feed, garbage (especially pig), plant protection compounds (Cu) and animal medicines. To prevent these risks, all opportunities have to be used to reduce the levels of heavy metal impurities in organic farms and to protect animals against disease in line with EU regulations in this direction.

3. CONCLUSIONS

The health of a nation today can be conceived in close connection with the most modern concept, the bioeconomy.
Bioeconomy naturally embraces organic farming, a farming practice system that makes more and more healthy and more natural "bio" food products available to consumers more and more interested compared to products from intensive modern agriculture.
Global demographic growth will lead to a 70% increase in food demand and an actual doubling of meat consumption. All this requires the definition of a global, strategic approach by developing a knowledge base that encompasses avant-garde sciences and last but not least local and implicit knowledge.
Through its food safety policy, the European Union only pursues the protection of consumers by guaranteeing the smooth functioning of the single market.

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