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ORGANIC AGRICULTURE – THE GUARANTEE OFFOOD SAFETY AND POPULATION HEALTH

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Abstract
The correlation between nutrition and the population health in the context of increasing the range of food products provided to the population, and quantifying their metabolic effects with frequent episodes of illness due to consumption of impropers food products, while have led to increase the population requirements for purchase of food with high food safety guarantees. Lately we remark from the consumers' part, that they provide a greater degree of confidence to organic products, in the detriment of conventional food. It seems that the high incidence of cancers, the increasing resistance to germs at treatments and more aggressive forms of manifestation of certain diseases, it could be reduced to extinction in the case of using organic food. Food safety has as main objective to guarantee the lack of harmfulness, toxic character and those factors which could cause illness to the consumers. By promoting certain processing technologies, along with no use of pesticides and genetically modified organisms or banning prophylactic antibiotic administration and hormonal preparations as growth promoters, the organic farming can supply food products to high standards of food safety.

Key words: *food products, food safety, organic agriculture, population health.*

INTRODUCTION

The nourishment represents for the population a permanent action factor, which determines the deployment of metabolic processes. It also maintaining the body homeostasis depends on the character of nutrition, influencing the human system functions, through enzymatic and hormonal factors (Ilie, 2007).

The quality of raw materials, unprocessed, is essential to the safety and quality of the finished product. Therefore, is necessary to a systematic approach along the whole food production chain, to prevent the food contamination and to identifying some possible risks associated with food production.

Providing food for the population into continuous growing and obtaining the varieties with high productivity, resistant to diseases and pests, are just some of the motivations for use in conventional agriculture of the fertilizers, the genetically modified organisms or a „modern" technology from land management (Tăpăloagă, 2014).

The damage of these actions are extremely serious, both for the environment: starting from reducing soil fertility, increasing the danger of erosion, changing the biotic balance, and for the population to, as a result of penetration of these toxins in the atmosphere, soils, surface water and foodstuffs, through residual doses of plant and animal products.

The risk food become contaminated exists throughout the food chain (Ilie, 2013). In general, food safety is threatened by the factors that fall into three categories. The first category is the most dangerous and it is represented by the biological contaminations which include bacteria, fungi, viruses or parasites that may contaminate raw materials and finished products. Chemical contaminants are the second category and include the chemicals from the environment, veterinary drug residues, heavy metals or other residues that reach accidentally in food, during the processes that involve agriculture practices or animal breeding and raising poultry, processing, transport or packaging food products. The third category includes the foreign bodies, metal fragments, broken glass, plastics accidentally reached in foods and that affects a limited number of customers, most frequently without endangering their lives (ILSI, 2011).

Till recently, the use of synthetic chemicals, including pesticides, it was a common practice. The use of pesticides, including insecticides,

fungicides, herbicides, rodenticides, in order to protect the crops against the pests, significantly reduced the losses, increasing the crop yields (vegetables and fruits) and protecting animals and humans to certain diseases (Carvalho, 2006). Today the use of these compounds is prohibited in countries with organic farming. The danger is still represented by the residues of these chemicals released into the environment that can contaminate food.

MATERIALS AND METHODS

1. Food safety

The concept of „food security" it's difficult to insure, of the one part due to diversify the range food products varieties, and on the other way, due to more intense atmospheric pollution, by emanations of toxic gases, by the specific activityes from industry and agriculture (Ilie, 2007). The harmful elements are increasingly numerous, requiring the enlargement of the area from the laboratory determinations and establishing new techniques, more efficient and faster.

Food safety concept used today includes the whole food chain intended for consumption by animals or humans. This is based on a series of regulations by which are assigned attributions and responsibilities of all those engaged in food chain, starting from livestock farmers, to raw material suppliers, including the processors and up to traders who must ensure the wholesomeness and quality of food purchased by the buyer (Ilie, 2013). Through this monitoring of all stages of food production, can be evaluated the risks of food chain, which may have direct or indirect effect on food safety provided, including animal welfare and plant health (Hansen et al., 2002).

2. Population health

Obtaining and providing increased amounts of the foodstuffs unfortunately is not synonymous with a high quality of their. The pollution of soils and water with heavy metals, nitrates, nitrites, hormones and bacterial toxins it led to the emergence and evolution of fulminant diseases such as autoimmune diseases, nutrition disorders and cancer (Carvalho, 2006).

The people's worries are supported by a series of events, such as: the pressence of Salmonella in meat and eggs, the identification of Listeria monocytogenes in milk and milk products, discovery animals with BSE, high levels of pesticides, antibiotics or additives in different foods or selling non-organic products as organic products (Hansen et al., 2002).

In most cases, the consumer is attracted to food that „looks good" from point of view of packaging and form of presentation, on the second place being the label which shows the safety and nutritional value of the product concerned.

3. Organic agriculture

Industrial agriculture began to be replaced with organic farming, which has as objectives firstly preserving the integrity of the biosphere and obtaining of food products by the rational exploitation of existing resources in the agro-ecosystem. This will ensure a high level of current population health and future generations, as a direct consequence of the consumption of a superior quality and salubrity food in a healthy environment (Rundgren, 2006).

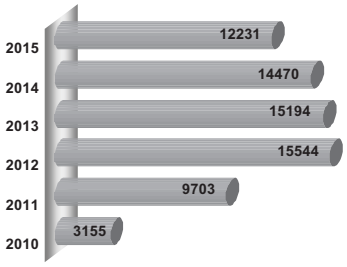

Figure 1. The number of operators certified in organic agriculture (http://www.madr.ro/ro/agricultura-ecologica)

Conventional agriculture has as main objective obtaining of quantities of increasingly food, even if this involves the use of technologies and substances which have a fully unclear effect in long term. The organic agriculture is considered an alternative to conventional agriculture systems (Tocan, 2013), who gathering every year increasingly more operators to be certified in this area, as can be seen from the Figure 1.

Although different countries use different terms such as organic, biological or ecological, they have the same meaning and designate one and the same, relying on the principles and practices of Standards International Federation

of Organic Agriculture Movement (IFOAM). They understand that can be obtained sufficient quantities of high quality food by using natural systems which must preserve the plant and animal diversity and not unilateral production increase by destroying of others (Scialabba, 2007).

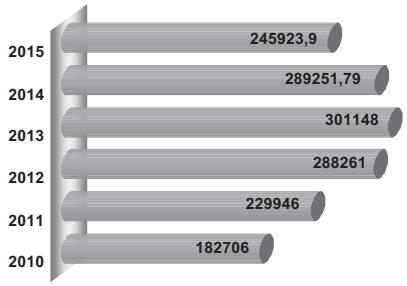

Figure 2. The total area under organic agriculture (ha) (http://www.madr.ro/ro/agricultura-ecologica)

An alternative for increasing the food production could be represented by expanding the cultivated areas, as can be seen from Figure 2. But this creates two additional problems, namely: increasing the consumption of water required for irrigation and increased need for farmers to work these new surfaces. Considering that the water resources per capita decreases from year to year, it requires the use of plant varieties resistant to environmental conditions of the region.

RESULTS AND DISCUSSIONS

The increasing of soil fertility can be done through proper management on crops rotation and using of manure, using the dung, to the detriment of using fertilizers, pesticides or growth stimulants. As the ground level there are more plants and living beings, the soil biological value is higher.

Livestock farming of productive, in intensive systems, using modern breeding biotechnique, associated with modern systems processing, they have improve people's living conditions through access to a wide range of food products of great diversity (Tăpăloagă et al., 2016).

In recent years they have taken a special scale animal welfare issues. Organic principles and regulations require that animals be applied to human treatment that does not cause pain, being forbidden to generate suffering by ill-treatment. Also, they are encouraged the husbandry practices and exploitation of breeds adapted to local operating conditions, resistant to disease, which benefit from microclimate conditions, comfort and organic feed to exploit their productions at maximum capacity, without using growth stimulants or GMOs.

Concepts like „sustainable development"or "sustainability" they are still widely discussed subjects in order to establish of priority of ensuring environmental quality and increase the food production (Davidson, 2005). It must be considered that in order not to endanger future generations it is necessary to achieve well-being of present population with environmental protection and rational use of natural resources (Scialabba, 2007).

According to a FAO Organic Agriculture and Food Security report on organic farms (2006), the stability of organic agro ecosystems is sustained by increasing soil organic matter and microbial biomass (Chaoui and Sorensen, 2008).

An increasing number of scientific studies have shown that agriculture is one of the main factors that play a role in climate change. The organic agriculture contributes to reducing emissions of greenhouse gases, global warming or acid rain (Hansen et al., 2002).

The organic agriculture is based on principles, which is based on best practices designed to minimize human impact on the environment (Gonciarov, Neagu and Tăpăloagă, 2014).

The specific practices of organic agriculture include: prohibiting the use of pesticides, synthetic chemical fertilizers, antibiotics, growth stimulators and genetically modified organisms. It encouraged the use of plant varieties resistant to pests and diseases, adapted to local conditions, growth animals in open spaces and feeding with organic feed or crops rotation for efficient and at the same time renews the soil.

CONCLUSIONS

The role of organic agriculture is to produce safe food, fresh, higher quality, with minimal intervention by a human using local resource.

Using the best performing varieties, resistant to disease and enabling higher yields, it may be a more prudent contributing to food security.

Maintaining animal health status of the premises for obtaining foodstuffs of high nutritional value, which have very low production associated risks of diseases associated with food consumption among consumers.

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