

## THE PREMISES OF ECOLOGICAL AGRICULTURE DEVELOPMENT IN THE REPUBLIC OF MOLDOVA

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### *Abstract*

*The purpose of this work is the presentation of premises of ecological agriculture development in the Republic of Moldova. The working methods applied to this study are: analysis and synthesis, as well as other methods and processes which enabled the identification and highlighting essence of the problem investigated. The research denotes a very important result: agriculture is the main economical sector of Republic of Moldova, and it always has played a very important role in the state economy. In this context, agriculture must bring valuable contribution in the state economical development.*

**Keywords:** ecological agriculture, organic food, ecological production.

### INTRODUCTION

According to the report of the Food and Agriculture Organization of the United Nations (FAO) and World Health Organization, the ecological development of agriculture, natural resources and ecological balance are recognized as priority sectors to solve the problem of global sustainable development. Also, it is mentioned that food security and population health are directly proportional to food quality and natural resources which they depend on (soil, water, air, light, genetic resources, etc.). National concept of ecological agriculture, production and marketing of ecological and genetically unmodified food products is elaborated on the basis of the Decree no. 1287-11 from December 29, 1999 issued by the President of the Republic of Moldova. Unlike the conventional agriculture, ecological agriculture follows the principles of a biotechnology excluding the technologies of industrial origin, and relying exclusively on natural ecological processes. The production activity in ecological agriculture develops using organic fertilizers, cultivating leguminous crops used in crop rotations, controlling diseases and pests using integrated ecological methods, totally excluding the chemicals produced by industry (fertilizers, pesticides, stimulants) and

giving up any application of genetic engineering.

### MATERIAL AND METHOD

The role of this agricultural system is to produce healthier food, more suitable for human body's metabolism, but also in correlation with environmental conservation and development, using various methods, procedures and techniques. For the purpose of an adequate analysis of commerce with organic food products of Republic of Moldova, it is used a series of methods and proceedings as: analysis, comparative method, analogy and synthesis, observation, grouping, table method and consultation the specialized literature, which allowed researching the topic essence and drawing some conclusions which we consider will present an interest for the sustainable development of the country. In this study, the analyzed period is 2006-2010.

### RESULTS AND DISCUSSIONS

Agriculture is the main economical sector of Republic of Moldova, and it always has played a very important role in the state economy. In this context, agriculture must bring valuable contribution in the state economical development.

*What is ecological agriculture?* Ecological agriculture (which is also classified as organic or biological agriculture) is a modern method of growing plants, fattening livestock and producing food by using those methods and technologies that are very close to the laws of nature - it doesn't use fertilizers and synthetic pesticides, growth regulators and stimulants, hormones, antibiotics and intensive systems of animal breeding [2]. In this regard, ecological agriculture differs fundamentally from conventional agriculture. The process and procedures of obtaining ecological products are regulated by strict rules and principles of production, which begin from taking into consideration the quality the land must have and up to the effective achievement of the final product. The process of transition from conventional to the ecological agriculture is not a short one. This transition is gradual, going through a transitional period, called "conversion period". This is the period when farmers have at their disposal time to adapt their business management to the rules of ecological agriculture.

*Ecological agriculture* is in full development on the global scale. It is practiced on the all five continents, on an agricultural area of about 26.5 millions of hectares.

Public health and food safety are directly proportional to the quality of food and natural resources. Ecological agro-alimentary production represents a way of sustainable development in agriculture, which allows the efficient resolution of a number of social, ecological and economic problems [1]:

a) social level:

- promoting a healthy alimentation and obtaining the agro-alimentary production on the basis of traditional conditions and experience;
- ensuring food safety and agro-alimentary products quality.

b) ecological level:

- environmental protection;
- protecting, preserving and increasing soil;
- development and use of correct models of animal husbandry;
- conserving natural resources.

c) economic level:

- meeting market needs with ecological agro-alimentary products;
- recommending an alternative source of economic development for rural areas;
- elaborating an agricultural form favorable for national economy.

At the same time, the market of ecological products has the share of 2.5-3% from the total of agricultural products [2]. Some of the main objectives regarding the development of ecological agriculture in the Republic of Moldova are the following:

- performing the evaluation and feasibility study on Moldova's premises to implement the technologies to obtain ecological and genetically unmodified agro-alimentary products;
- drafting national legislation and standards in accordance with international standards in this area;
- elaborating eco-pedological indices necessary to delimit the lands that are suitable to obtain and produce ecological agro-alimentary products;
- implementing the systems of crop rotation, fertilization and anti-erosion protection of soil according to the ecological agriculture standards;
- planting varieties and hybrids with biological plasticity, resistance to diseases and pests;
- integrated monitoring of all segments within the system of ecological agriculture and production of ecological and genetically unmodified food products.

International Market of ecological products is always on the increase. This element has contributed to the ecological agriculture development in the Republic of Moldova and to accelerate the export of agro food products.

Encouraged by the legislation elaborated by the Government of the Republic of Moldova, the Moldavian farmer interest has increased, as well as of the economical agents concerning the organic food production. The ecologically certified areas for ecological agro-alimentary production, constitute about 11,000 ha, and its volume is estimated up to 30,590 tones. The premises of ecological agriculture development in the Republic of Moldova are the following:

1. Ecological conditions of the Republic of Moldova are favourable for the cultivation of a wide range of valuable agricultural crops (horticultural, ethero-oleaginous, etc.).
2. Soil surface with a high productive potential and a great self-purification capacity ensure high and qualitative yields of the listed crops.
3. Satisfactory quality of water resources allows applying irrigation without the danger to pollute the soils and crops or to cause land degradation, and ensures a high quality of the agricultural production.

The national scientific and technical potential is able to provide the necessary scientific support to obtain and produce ecological products.

On December 17, 2010, the national brand "Ecological Agriculture - Republic of Moldova" was officially presented. It will be applied only to those agro-alimentary products that are compliant with the rules of ecological production. The national brand "Ecological Agriculture - Republic of Moldova" is used for labelling and presentation of ecological products and it is applied only to those agro-alimentary products that were inspected and certified throughout the production cycle by inspection and certification bodies authorized by the Ministry of Agriculture and Food Industry.

Organic food production areas of the Republic of Moldova, ecologic certified, from about 11 thousand hectares, which volume is estimated at 30,590 tones.

Organic food production is at the global scale. It is practiced in about 154 countries from all the continents, on about 31,584,720 ha, out of which 42.9 % in Oceania (Australia), 23.8 % in Europe, 23.5 % in Latin America, 5.5% in North America, 2.8 % in Asia and 1.6% in Africa.

In Europe, at present, there are cultivated about 7.6 million ha with ecological crops, in about 178 940 farms, of which Austria 12%, 9%, Finland 7.22%, Italy 6.86%, Sweden 6.8%, Greece 6.24%, Denmark 6.2%, Czech Republic 5.97 %, Estonia 4.59%, Slovenia 4.6%, Great Britain 4.42%, Germany 4.3%. The world market of organic food products is about 3.1-4.3%.

In the same time, organic food production is a sustained form of production of food products without those of chemical synthesis usage (insecticides, fungicides, herbicides and mineral fertilizer), which are based on the maintenance of a fertile soil through its fertilization with organic fertilizers, crop rotation and balanced alternation of crops, as well as disease and pest control through biological methods.

The animal ecological production is based on animal health and the methods of farm management, which will prevent the necessity of a veterinary doctor.

Strategically, the qualitative purpose of the sector is the positioning of the ecological agriculture in the centre of the national agriculture, as a pivot for the sustainable development in the rural environment. The main purpose of EU agricultural policy concerning the rural development is the promotion and development of a compatible relation between agriculture and environment [3].

Ecological agriculture has a main contribution to the sustained economical development and has an important role in the improvement of environmental conditions, soil preserving, water quality improvement, bio diversification and nature protection. Thus, promoting and developing the ecological agriculture could be a starting point in the rural economy and to make it viable through the extension economical activities with high value added and through generation of jobs in rural zones. Quantitative purpose is to extend the cultivated zone through ecological methods and creating an inner market with ecological products. The republic of Moldova has great opportunities of ecological agriculture promotion and development due to an agricultural area of about 1.8 million hectares and of unpolluted soils.

For the Republic of Moldova, organic food production and its commercialization represent a real chance to penetrate foreign markets which are supersaturated with products from conventional agriculture and endure lack of ecological products. The value-added to the ecological products production and commercialization, together with reduced

expenses for their obtaining, allow the income increase amassed by rural communities for solving socio-economical problems in rural zones.

In such a way, the supporting of ecological agriculture promotion and development is a new fundamental element - a rural development policy, meant to encourage numerous rural initiatives, helping, in the same time, the farmers to reorganize their farms, to diversify the product range, as well as to penetrate in different markets. In the last years it increased the inner economical agent's interest concerning organic food production, confirmed by the areas and volume rise of this production. Peco-climatic conditions of the Republic of Moldova are favourable for cultivating a wide range of agricultural crops having both ecological and biological value (vegetables, fruits, grapes, ethero-oleaginous plants etc.).

Thus, the efficient use of existing priorities: fertile and productive soil, moderate use of synthetic chemical plant protection products and related technologies, gives the possibility for Moldovan traditional agriculture to create conditions for the development of ecological agro-alimentary products.

At the same time, the qualitative purpose foresees the organic food production placement in the centre of Moldavian agriculture as a factor of its sustainable development. So, the main parameters which can be mentioned are the producers' growing number, as well as organic food production volume predestined for local market development and the penetration of markets at the exportation of these products. In order to achieve sustainable development of the agro-ecological sector and to improve the competitiveness of ecological products both on local and export markets, there was elaborated a table that shows volume increase of ecologically certified vegetal products on the period 2009-2015 [5] (Table 1).

For promoting the trade with foods it is necessary to apply the systems of organic food production and of alternative systems to conventional agriculture which differ through the reduction of industrial pressures on the ecosystem. It is necessary to mention from the beginning that in the globe poor areas which face serious problems of food safety,

practically, we cannot talk about an alternative agriculture when even the traditional one does not function at the appropriate level.

Table 1. Prognostic regarding volume increase of ecologically certified vegetal products

	Measuring unit	Years	
		2009 real	2015 prognostic
<b>Total quantity (of which:)</b>	Tones	24,546	98,488
<i>Cereals</i>	Tones	13,860	31,460
<i>Oleaginous and proteic</i>	Tones	4,146	16,450
<i>Beekeeping products</i>	Tones	10	75
<i>Fruits (cherries, sweet cherries, apricots)</i>	Tones	280	750
<i>Berries, mushrooms</i>	Tones	450	850
<i>Other crops</i>	Tones	5,800	48,903

For the Republic of Moldova the necessity of lifting the living standards through satisfaction with cheap foods oblige the intensification of traditional agriculture; and the European integration context impose the conversion to an alternative agriculture, by complying with the Community legislation.

In these conditions going on with the development of intensive agriculture by using all the possibilities in starting organic food production. Regardless of these two directions, the promotion of ecological agriculture implies the organization of a series of measures starting with the producer and ending with the consumer. It already has proved the beneficial influence of producers associations of ecological products which facilitates their production, processing and commercialization through local and international trade networks.

A contribution to this direction can be the traditional food products re-evaluation and commercialization, for their realization the preparatory measures are easier. It is necessary to mention the fact that, in the developing conditions of the Republic of Moldova, the ecological product, offered both by "supermarket" network as well as by local agricultural market, can bring important contributions to the increase of these products attractiveness.

For sustainable development of agro ecological sector and for improving ecological products

competitiveness on the local and export markets it should be identify and implement the following measures:

- Recovery and development of ecological and biological value-added (EBVA) component at the national level, by the orientation of production to the consumers demand, primary products commercialization and those intended for processing.
- Local market development, as well as promoting ecological products for exportation by covering the existing market niche, also identifying a new export market and consolidating the existing markets.
- Creating producers and processors associations for the production and markets extension.

*The advantages of ecological agriculture in the Republic of Moldova are the following:*

- air, water and less contaminated agro-alimentary products;
- safe working conditions for farmers;
- biodiversity;
- fertile and healthy soil;
- reduced soil erosion;
- efficient use of water;
- nutritional quality of the ecological products;
- environmental protection;
- reduced use of non-renewable resources;
- reduced farmers risks;
- protecting future generations.

*As disadvantages of ecological agriculture in the Republic of Moldova we can mention:*

- low yields;
- the cost for ecological products valorification is higher than the one for conventional products;
- necessity to support ecological agriculture;
- ecological products are often suspected to be toxic;
- certain agricultural products sometimes lack organoleptic characteristics (appearance, taste);
- existence of false ecological products on the market;
- control and certification process must be improved;
- lack of research and extension systems for ecological agriculture.

The development system of organic food exportation consists in: economical agents from agro food production may be part of the second system, even if they do not have the necessary logistics or are not enough informed about the existing links between the trade networks.

Ecological products exportations are designed for importing product enterprises or wholesale importers. It is very important to make the correct choice of commercial partner, because the enterprise success is specially based on importer's reputation, as well as on his ability to commercialize the product on that market. The chosen partner must offer, among others, correctness and professional integrity guarantees, because these human qualities are essential for duration and association success formed by exporter and importer.

## CONCLUSIONS

Ecological agriculture makes a great contribution to long-term economic development and plays an important role in improving environmental conditions, soil preservation, water quality improvement, biodiversity development and nature protection. In order to develop the agro-ecological sector and to improve the competitiveness of ecological products on the export markets, the following conditions must be identified and implemented:

- 1- establishing and maintaining the value chain by orienting the production and sales towards primary products and processed products as well as promoting local ecological products for export;
- 2- creating an appropriate system of production, processing and marketing for the ecological products designed to meet the needs of internal and external markets;
- 3- promoting the export of local ecological products by developing the research activity and improving professional training of all the persons involved in the ecological sector;
- 4- creating organized groups of producers to enlarge the production and market. Strategically, the qualitative objective of this sector consists in positioning the ecological agriculture at the heart of

national agriculture, as a basis for long-term development of rural areas.

Maintenance of local offer of agricultural products implies the increasing the assortment of plant and animal production. In order to diminish the existing gap between plant production and average outputs of cereal, technical, fruit and vegetable growing crops acquired from country with those registered in worlds states, it is necessary to modernize these branches by technical endowment of agricultural entities, irrigation extension, optimization of agricultural establishment structures and the increase of the range of cultivated agricultural crops, creating the supply units with modern and qualitative inputs for agriculture and those of agricultural products collection.

Republic of Moldova has a number of favourable conditions for organic agriculture development: the proximity of the biggest consumer of organic products - EU, farming land with a low chemical, lack of harmful

chemical industries, processing food industry relatively well developed, a high interest from outside and a developing the legislative framework.

For increasing the quality of export offers it is necessary to continue the implementation of quality management systems HACCP, ISO, EUROGAP in order to correspond to the European quality standards and food safety.

## REFERENCES

- [1] Bajura, T., 2004. *Agricultura autohtonă în comparație cu cea mondială*. Editura IEMI, Chisinău. Pp 18-21.
- [2] Dumitru, M. et al, 2003. *Cod de bune practice Agricole*. vol. I. Ed. Expert, București. Pp 26-31.
- [3] Gudîma, A., 2002. *Republica Moldova și Uniunea Europeană ca parteneri*. Editura TACIS, Chișinău, Pp. 59.
- [4] *Decretul Președintelui Republicii Moldova nr. 1287-11 din 29 decembrie 1999*.
- [5] *Hotarire cu privire la aprobarea Programului National de asigurare a securității ecologice pentru anii 2007-2015 nr. 304 din 17.03.2007*.