Ecological Agriculture and Rural Development. Premises

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Following the new climate changes, natural disasters, and the increase ratio of alimentation-caused illness, new concepts of preserving the environment have been developed. Through this concept, we can find the concept of ecological agriculture meaning to preserve the agricultural natural resources and environment, and at the same time, bio-diversity. This works intends to present some of the ecological agriculture's principles and to assess the importance of this sector in future rural development on short and especially long term.

The ecological agriculture concept is based on a holistic vision, the nature being perceived as a union, and not the sum of some components. Its principles are tightly related to the principle of ecology, the science concerning the interrelations between living organisms and environment. That means that farmers learn and apply the Mother Nature's advises. The farmers try to imitate the nature's mechanisms, to obtain equilibrium between the maximum possible yields and biological resources recycling. In the last century the healthy principles of the ecological agriculture, were replaced by so called "Intensive Agriculture". For example, instead of very biologically-important crops rotation mono-crop practices were used, by imploying on a large scale pesticides and artificial fertilizers.

We can see the environment pollution as a result of the agricultural activities, through nitrites accumulation into the soil, but also in surface or underground water resources, in the pesticides effects to human and animals, air pollution and other negative phenomenon. Another effect following forestry destruction is soil sliding after the abundant rains. As a result, the concepts of ecological agriculture occurred. In the last few years, ecological agriculture has demonstrated its technological capacities, and highly efficiency. At the same time the value of "conventional" food products decreased considerably (concerning vitamins, calcium, riboflavin etc). In the ecological agriculture conditions, for the fruits, cereals and vegetables, supplementary nutritive values were ascertained, with about 20-60% percents. Due to these superior nutritive values, the fresh ecological crops are tastier than the other products despite of not so good-looking aspect. In the dryer areas, the ecological agriculture technologies are more efficient. The exclusion of mineral amendments and organic manure administration contribute to a more abundant root system development and reduce soil compaction. As a result, humidity is preserved in soil and the degree the plants use the water is increasing. Thus, in arid areas and drought years, the cereals, the beans-vegetable and the industrial crops are bigger for ecological ones. The ecological products are inoffensive for people. The use of mineral fertilizers and pesticides is tightly related to accumulation in air, soil and in agricultural products. The accumulation of fertilizers can be the cause of serious injuries, due to the bio-chemical and physiological processes of human organisms. Some of the pesticides are beyond the poisoning effects, cancerous and mutagen (especially nitrites other nitrate composites).

In the case of ecological agriculture this type of negative phenomenon are missing and the environment is preserved or even improved. Employing a comparative analysis, the ecological agriculture as opposed to intensive technologies, the former is not influencing the human living environment and the bio-diversity is preserved. Ecological agriculture also contributes to flora and animal protection. In the ecological farms, there are 2-3 times more species from spontaneous flora, the number of birds being 57% bigger. The ecological technologies help to preserve the structure and soil's biological composition.

This contributes to maintain the vegetation, the humidity, the number of utile micro-organisms which is increasing 85%, the symbiotic micro-organisms and free nitrates fixing of roots system surfaces. As consequence, biological diversity of many non-vertebrate organisms, including predators and parasitoids which control the density of the harmful organism's population, is registered. The ecological products activate the animals' reproductive processes, solve the cardiac problems and stop tumour development.

Within the organic vegetables there is 3-5 times more salicylic acid. This is synthesized by the plants, as a remedy to different stress factors, fighting against harmful organisms. The ecological agriculture can satisfy the food necessities of Terra's population. In many worlds' regions, the ecological yields are not smaller or are even bigger than conventional ones. The situation is the same even in Romania. In a study made by University of Agriculture and Veterinary Medicine from Cluj-Napoca, Romania, the ecological yields are bigger for 7 considered crops and smaller for two crops. The ecological agriculture acts over the national economies through profit accumulation, creating new jobs, increasing thus life standards of inhabitants.

The ecological agriculture is a vital necessity, and a new legislative frame has to be elaborated, new researches to be done in order to build a better life for the next generations our planet and for us. We do not pretend the ecological agriculture is a substitute of the conventional agriculture, but its role has to be increased and some of its principles to be applied on a large scale.

Some of the ecological agriculture principles:

- to stimulate the biological processes not using artificial/chemical inputs;
- the use genetically modified organisms is totally forbidden;
- to apply preventive procedures rather than curative;
- to optimize the crops and crop rotation;
- the number of animals and available feed lands (pastures) has to be correlated;
- using the agri-forestry systems: forest alternation with cultivated surfaces and animal breeding farms;
- the farm is an entire autonomous system having the human being in its centre.

The ecological agriculture doesn't mean to return to a primitive agriculture, but to harmonize the traditional concepts of preserving the environment with the new scientific technologies.

The bio-dynamic agriculture is a related concept. It is based on antropozophic concepts and the ideas launched in 1920 by the Austrian philosopher and scientist Rudolf Steiner. The basic principles consist in maintaining and propagation of living organisms' processes in soil, air and nature and the interaction with cosmically energies and other energies coming from sun, stars, moon, and other planets.

The bio-dynamic agriculture combines the animal breeding farms and crops farms in a mix system, using the compost and bio-dynamics ingredients (spontaneous flora, animal and mineral matters, specifically combined) in order to vitalized the soil which can thus transfer the gained vitality for plants and secondary for animals and people. Embedding, growing and harvesting take place following the cosmically rhythms. There are also other non-organically procedures representing alternatives to the intensive production systems, by protecting the environment. One example is "low-external-input sustainable agriculture (LEISA)", a type of agriculture based on using local resources. The difference between LEISA and organic agriculture consists in using the chemical inputs in small quantities. The total elimination of chemical substances is not recommended. The production systems combine the chemical and biological procedure being thus a compromise between ecological and conventional agricultural systems.

The ecological agriculture is different from the other type of agriculture through the productions' standards and certification procedures. The private associations developed the standards, those associations giving to their members, the rights to use the specific labelling. Nowadays more than 100 standards have been developed. In many countries, norms concerning the production and food-procession together with certification were adopted or are going to be adopted.

The certification of ecological production methods has an increasing importance in international trade. Most regulations demand that the products labelled as ecological to be

certified by an independent organism, thus the consumers have the guarantee of respecting the productions' standards. Unfortunately, for small exploitations the certification costs can be prohibitive. To reduce those costs, group certifications are available and the standards should be harmonized between countries. Adopting ecological technologies could be limited by the costs of training and know-how implementation. The farmers should be sure they would benefit from the investment even through soil fertilization is not used. Other problem is the small-side markets concentrated especially in developed countries. The information about those markets is, thus difficult to gather. Another problem is the conversion period of 2-3 years. This is the most difficult period for an ecological farmer. The yield is decreasing in this period and also the products can not be sold as ecological. The credits are in this period difficult to find due to the risky transition period. The state should contribute to the development of this sector of agriculture keeping into account that in "intensive" agriculture the following costs are not calculated: water pollution, bio-diversity reduction and, for sure, the costs for public health.

The small producers are advised to establish associations, to create proper infrastructures including production, acquisition and primary processing.

Certification

In order to inform the consumers about the ecological character of a product the specification of a label is necessary. In the last decade, a strong increase in using that type of labelling was ascertained. Before, it was a non-loyal concurrence concerning some producers some non-ecological products being sold as ecological. Today the use of term "ecological" is very restrictive in many countries, indicating the certification organism and protecting the consumers against false labelling. Certification is also a marketing instrument, allowing farmers to have access to ecological products market and to obtain higher prices; plus, to offer more transparency to those types of products. Certification is the procedure of verification of the products' compliance to standards. These standards can belong to a private association/company or to the state certification bodies. Some farmers' organizations could establish their own certification programs, direction, procedures, and management rules by themselves. Other certification bodies can use both private and official standards. In the countries where two types of standards exist, the private standards should comply with the official standards.

We have to make a clear distinction between private marks introduced by organic associations and companies which adopted the certification programs, certification bodies' marks and national marks established by governments. Most certification programs are using their own "logos", in order to differentiate the products of different members or their operations. In order to enter to an ecological market, the producers have to certify the products according to the market's standards. In many cases it's a good thing to be certified by a well-known, certification body. For a product to be ecological certified, all the members of the production chain, including farmers, processors, manufacturers, exporters, importers, distributors have to be certified for their activity in compliance with standards and norms of the certification programs involved. Certification is not only related to products but also to a transformation the product suffers. Anyway, the producer is responsible to the certification body about the correct utilization of a product.

For Romania, the ecological agriculture is an opportunity which has not to be lost. In the last years, the use of chemical fertilizers decreased dramatically so the land is proper for ecological agriculture. The soil fertility is superior to many other countries and the cost of labor force is lower than in Western countries. Conventional agriculture in EU-countries is capital intensive and it would be extremely difficult to face the concurrence in these conditions. These are some of the reasons why Romania has to exploit this market niche.

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