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Environmental Education and the Development of Organic Farming – Experience of Poland and Ukraine

Poland and Ukraine are the two countries which in the course of their historical development overcame similar economic problems. However, the ways to resolve those problems were not always the same. Pursuing their own policy, these states at the turn of the twenty-first century reached different results. By now, Poland has acceded to the European Union and other international communities. Ukraine is still on the way to the EU membership, trying to promote and deepen the partnership with the European states. The immediate task facing Ukraine currently is to implement reforms in all sectors of production bringing the country's economy to international standards, introduce legal mechanisms and develop market economy.

Living in similar natural environment, Ukraine and Poland face a common problem of rational use of agricultural lands to reduce the negative impact of agriculture on the environment. From this perspective it would be quite interesting for Ukraine to study the experience of Poland in the development of organic farming or ecological agriculture. Having analyzed some legal documents of the Republic of Poland and the scientific papers of Polish scientists, we can assume that it is the result of the systematic state policy in the agricultural sector based on the formation of environmental education in agricultural universities in Poland.

According to the Polish scientist S. Wiąckowski, the most important values in the process of training are human dignity, respect for life and natural diversity, the right for freedom and peace, the opportunity of comprehensive human development and formation of personal responsibility (Wiąckowski 1997).

The obligatory realization of the following principles of environmental training at all educational levels is reflected in many state regulatory documents of Poland (Grodzińska-Jurczak 2004). In particular, it concerns agricultural universities, where environmental education should outrun practical needs (Kośmicki 2005).

This point is equally important for both Poland and Ukraine, where the chances to compete with the Western European model of intensive agriculture in the coming years are insignificant and undesirable in terms of biodiversity. Greater success can

be achieved by ecologically-oriented agricultural sector and production of organic foodstuffs, competitive on international markets. It should be emphasized that this alternative to traditional agricultural management requires that professional training of specialists in agricultural sector should be intensively focused on the principles of ecology as a science and formation of the system of knowledge about the development of crop growing technologies that stimulate adaptation of crop varieties to climatic changes and increasingly frequent drought conditions.

The above views enable us to examine the relationship between the development of organic farming in the country and the availability of environmental issues in the content of the main agricultural training programs in the higher educational institutions of Ukraine and Poland.

Poland is a country where the use of chemical inputs in agriculture has always been lower compared to other European countries, which resulted in the best biodiversity and environmental quality of agricultural products in Europe. As it is stated in the Polish normative documents, this fact encourages farmers in Poland to produce ecologically clean agricultural products and increase their volume on the European consumer market[1].

According to the works of the Polish researcher A. Strumińska-Doktór, organic farming is based on the following important principles:

- Improving soil fertility by introducing organic fertilizers (compost, green manure, animal waste) and crop rotation;
- Maintaining the biological activity of soils and their protection from erosion by using rows (no weeding between rows);
- Balance of crop and livestock production reflected in the economy as the balance of fodders and fertilizers;
- Use of proper fodder for feeding animals (exclusion of synthetic additives from the diet);
- Ensuring the housing conditions of animals appropriate for their breed;
- Sustaining biodiversity of domestic animals, cultivated plants and their wild relatives that are raised on the farm;
- Developing variety of agrobiocenoses (Strumińska-Doktór 2007).

It should be noted that the principles of organic farming are reflected in the training programs of all agricultural areas of higher education in Poland. Particular attention is paid to organic farming in the cycle of specific content modules of training programs.

We analyzed the curricula of the basic agricultural areas (agronomy and animal science) at Warsaw Agricultural University (SGGW), considered to be the leading natural and agricultural university in Poland. The analysis shows the increased focus on training future professionals of the agricultural sector to implement organic farming (table 1).

[1] Plan Działań dla Żywności Ekologicznej i Rolnictwa w Polsce na lata 2007–2013.

Tab. 1. The content modules with elements of organic farming in educational training programs for EQL "Bachelor" in selected areas at Warsaw Agricultural University (SGGW).

	Fields of Study	
	Agriculture	**Animal Sciences**
Course contents with elements of organic farming	– agroecology and environmental protection – animal breeding – plant growing – propaedeutics of organic farming – biological methods of agrophage destruction – organic crop production – natural use of sewage and waste – standardization of agricultural products – agrotourism	– ecology – livestock breeding – poultry – hygiene and prevention of animal diseases – pig raising – culture of a Polish village – a human in nature – "Natura 2000" program – agro-environmental programs – nature protection – animal keeping – environmental problems in pig and poultry raising – modern trends in using horses – livestock production in ecological farms – alternative technologies of livestock production – analysis of fodder

Source: Author's study

The content of the modules with the elements of organic agriculture can develop in future professionals the ability to understand organic farming as a form of agriculture that uses natural facilities providing long soil fertility and healthy animals and plants. This management system is based on the balanced crop growing and livestock production using natural materials. With the removal of pesticides and artificial fertilizers, organic farming does not cause contamination of soil and water, limiting leaching of nutrients and promotes the development of micro-organisms in soil, produces high quality food products that are appreciated by consumers.

Organic farming is the sector of agriculture which is characterized by the fastest pace of development, especially in Europe. Poland also tends to increase eco - friendly production. In the late 1990s there was a growing interest in this branch in Poland. Organic farming originated as a social movement. Then, the Ministry of Agriculture and Rural Development of the Republic of Poland (Ministerstwo Rolnictwa i Rozwoju Wsi RP) began developing regulations in this branch of agriculture. The government provided financial support to households in the form of subsidies per hectare of areas subject to organic farming.

In recent years there has been a dynamic development of organic farming in Poland. The state support for the industry creates opportunities for solving problems of food security, food quality assurance, environmental protection, animal health and rural development. Organic farming is important not only as a producer of foodstuff, it also affects the maintenance and even the increase in species diversity

of agrobiocenoses. The use of organic technologies in agricultural production is beneficial to the environment, as it does not cause pollution or degradation of natural areas.

Though the scientific principles of organic farming were developed over 40 years ago, Ukraine at present has not reached the level of Poland in this direction. In the early 1970s the Ukrainian scientist M. Shykula began the study of soil without the use of chemicals. Experiments were conducted on a collective farm named after Ordzhonikidze in Poltava region[2]. However, this way of management at that time contradicted the theories of industrial agriculture promoted by the government, and consequently, the positive results of the research did not receive large-scale development. Only at the end of the 1990s Ukraine resumed its interest in organic farms thanks to the scientific collaboration with ecological farms in Western Europe. According to the latest data, there are 72 ecological farms operating in Ukraine and covering about 240 hectares of organic production. In comparison, the number of farms in Poland exceeds 15,000 covering the area of over 300,000 hectares[3]. Hence, Ukraine has enormous industrial potential in the field of organic farming. Though the Ukrainian market of ecological agricultural products and the processing sector are relatively underdeveloped, the vast percentage of finished goods is exported.

We believe that the reason for such a situation is not only insufficient attention to environmental and agricultural policy by the state. The analysis of curricula and programs of the major agricultural fields of study in Ukrainian higher educational institutions also indicates that there are drawbacks in their content, insufficient number of specific disciplines that include elements of organic agriculture, ecological approach to agriculture, which ultimately do not contribute to the formation of environmentally conscious citizens and decision-makers in agricultural sphere. In our opinion, an important part of education that may solve the problem of environmental training in agricultural sector is the variable component of education. When analyzing this issue, we considered the observation of V. Kremin that standards should become a means of providing government guarantees of the quality of education at a fundamental level, and they should also ensure the maximum variation of the content and structure of training in order to ensure the operational change of priorities in the labour market (Kremin 2005).

Thus, the purpose of the variable component is to reflect historical, economic and legal impact of the specific branch of production on the environment and opportunities to prevent and eliminate its negative effect. The study on the aforementioned is subject to a certain algorithm:

1. In terms of its impact on the ecological systems, on air, land, water, forest and other resources, industry occupies the leading position among other branches.
2. Rational use of natural resources is an environmental component of production, through which natural resource potential involved in the economic circulation

[2] Organic farming, http://byshev.org/stati/organ-chne-zemlerobstvo.html.

[3] Rolnictwo ekologiczne po ukraińsku to: dużo i tanio, http://www.ewgt.com.pl.

affects the socio-economic system, ensures protection of the environment and creates the necessary conditions for the restoration of natural resources and life support.

3. Environmental management using resource-saving technologies is a powerful way to accelerate scientific and technological progress.
4. Implementation of measures for resource conservation, preventing ingress of contaminants into the environment, development and implementation of measures to protect certain objects of nature, development of measures to prevent emergencies aimed at ensuring environmental priority in all kinds of business.

Thus, the variable part of training programs for educational institutions creates opportunities to realize the objectives of environmental education by developing the content of elective courses. To compare the semantic content of the disciplines in the variable part of the training programs in the areas of agricultural universities in Ukraine and Poland through the prism of environmental education, we analyzed the description of variable (elective) disciplines in the curricula of National University of Life and Environmental Sciences of Ukraine in Kiev and Wrocław University of Environmental and Life Sciences (table 2).

Tab. 2. Comparison of optional subjects of the undergraduate studies Field of Agriculture at the Wroclaw University of Environmental and Life Sciences (Poland) and National University of Life and Environmental Sciences of Ukraine in Kiev (Ukraine)*

University of Environmental and Life Sciences in Wroclaw (Poland)	National University of Life and Environmental Sciences of Ukraine in Kiev (Ukraine)
Category of plant production:	1. Accountancy and audit in farming
1. Rational management of mineral components in farming	2. Statistics
2. Diagnostic of fertilization needs	**3. Biological protection of plants**
3. Diagnostics of plant pests	4. Herbology
4. Diagnosis of crops diseases	5. Crops programming techniques
5. Cultivation and use of energy crops	6. Production of food crops
6. Growing plants in mountainous areas and susceptible to erosion	7. Technical plants
7. Crop rotations in modern agriculture	8. Apiculture
Category of modern technology in agriculture:	9. Agricultural melioration
1. Methods and optimization of microelements fertilizing	10. Agricultural virology
2. Computer consultancy fertilizer	11. Agricultural Zoology
3. Biotechnological methods in plants breeding	12. Gardening in greenhouses
4. In vitro in plant breeding	13. Forest melioration
5. Immune breeding of plants	14. Land registry
6. Soilless plant cultivation	15. Agricultural Microbiology
7. Modern technologies in plant nutrition	
8. Modern technologies in cultivating	

Category of marketing and promotion of agricultural production: 1. Pricing resources in agriculture 2. Banking and securities market securities 3. Information technology in agriculture 4. Use of computer technology in presentation and advertising company 5. Multimedia techniques in the creation of visualization projects 6. Rural cooperatives 7. Organizations of manufacturers groups **8. The economics of plant protection** 9. Agricultural Law 10. Market of agricultural equipment *Category of agriculture impact on environment:* 1. Bioremediation and phytoremediation of soils 2. Plant protection products in ecosystems 3. Waste and unconventional fertilizers 4. The effects of chemicals use in agriculture 5. Rehabilitation of degraded farmland 6. Useful entomofauna agrocenoz 7. Rehabilitation plants 8. Biological aspects of soil fertility 9. Legal and economic instruments in environmental protection	

* Subjects which contain descriptions of the environmental content are in bold

Source: Author's study.

The difference in the list of elective disciplines and their content is quite obvious. Thus, the analysis of the content of educational standards, programs and curricula of training specialists in the key agricultural fields of study at universities in Poland proves that they are straightforwardly focused on formation of environmental knowledge and professional skills of a future specialist, which, in our opinion, promotes the development of ecological agriculture in the country.

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Abstract

The article presents dependence between the development of organic agriculture in the Poland and Ukraine and environmental education of future specialists at the universities of these countries. An important part of the article is devoted to the analysis of the programs of such faculties as Agriculture, Animal Husbandry, Agricultural and Forestry Technology in University of Environmental and Life Sciences of Wroclaw and National University of Life and Environmental Sciences of Ukraine in Kyiv. Great opportunities of selective courses in formation of readiness to develop the organic farming was made. Comparative analysis of the degree of development of organic farming in Poland and Ukraine was also made.

Key words: environmental education, organic agriculture, the content of education, agricultural universities

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