

## ANALYTICAL EVALUATION OF ORGANIC AGRICULTURAL DEVELOPMENT IN UKRAINE

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### Abstract

*This article explores preconditions for the development of agrarian enterprises producing organic products in Ukraine. The study is focused on analysis of the factors that determine the competitiveness of agrarian producers of organic food, as well as trends in organic production development. The paper is an analytical assessment of Ukrainian organic farming development based on the scientific works existing in the literature and the reports of the enterprises. The investigation has proved the efficiency of the organic farming system implementation at Ukrainian enterprises.*

*Key words:* organic farming, organic products, competitiveness, agrarian enterprises

### INTRODUCTION

In the last decade, the development of organic food production and agrarian enterprises and other entities that provide it, is becoming increasingly important. Their work is focused on the preservation and reproduction of the natural environment and its biodiversity, the increase in the volume of high-quality food, better health and social conditions of the population.

In Ukraine, the urgency of the problem of organic production enterprises development is of the highest priority among other important problems of the functioning of the agrosphere. Domestic consumers seek to improve the quality of consumption and healthy lifestyle. Organic products provide real benefits to consumers who prefer the use of organic production methods, and therefore the organic produce market is constantly growing.

To intensify the processes of increasing the turnover in this market, the issue of analytical evaluation of the development of agrarian enterprises-producers of organic food and

factors that determine the competitiveness of agrarian enterprises-producers of organic food in the conditions of European integration of Ukraine, requires further research.

### MATERIALS AND METHODS

According to the International Federation of Organic Agricultural Movements (IFOAM), the size of the world organic market is 62.9 billion dollars. The US is projected to reach \$ 200-250 billion in 2020.

In recent years, Ukraine has ranked 21st in the ranking of organic producers. The share of certified organic areas in the total agricultural land in Ukraine is about 1.1%. In addition, Ukraine ranks first in the Eastern European region regarding the certified area of organic arable land and specializes in the production of cereals, legumes and oilseeds [12].

In Ukraine, the concept of the State Program for the Development of Organic Production has been developed. The purposes of the Program are: to ensure sustainable development of the agrarian complex of

Ukraine by developing and supporting organic production as one of the priority directions of the implementation of the state agricultural policy aimed at preserving and improving the soil fertility; to ensure the competitiveness of Ukrainian agricultural products in conditions of Ukraine's integration into the world economic space; to promote nation's health protection by providing the population with high-quality and safe certified organic foodstuff as well as other goods; to promote environmental protection and biodiversity conservation; to create proper conditions for the development of rural areas.

This study aims at conducting an analytical assessment of Ukrainian organic farming development. It is based on the scientific works of the authors who have made a significant contribution to the development of the theory and methodology of the organization of organic production of agrarian enterprises, in particular Antonecz and Pysarenko [2], Artysh [3], Kapshtyk and Demydenko [6], Marmul and Novak [7], Pysarenko [9], Pylypenko [8] and others.

## RESULTS AND DISCUSSIONS

An important impetus for the development of organic production in Ukraine was the implementation of the Swiss-Ukrainian project - "Certification of organic agriculture and the development of the organic market in Ukraine", implemented by the Research Institute of Organic Agriculture (FiBL, Switzerland). As part of this project, in 2007 the Organic Standard, Ltd. was created - the first Ukrainian certification body providing services in the field of organic production [4]. Today, such organizations as the Federation of Organic Movement of Ukraine, the consulting authority QueS, Retail Academy, Organic Business, etc. contribute to the development of organic agricultural production in Ukraine.

With great potential for organic agricultural production, its exports, consumption in the domestic market, Ukraine has achieved significant results in the development of organic production. In response to increasing global and domestic demand for ecologically

safe products, production and processing of organic agricultural raw materials are intensified Marmul and Novak [7]. This is evidenced by the increase in certified organic areas and capacity of the national consumer market for organic products (Figure 1). Thus, the area of certified agricultural land in Ukraine involved in the cultivation of various organic products is already more than four hundred thousand hectares, and our state holds the honorable twentieth place among the countries-world leaders of the organic movement [5, 1].

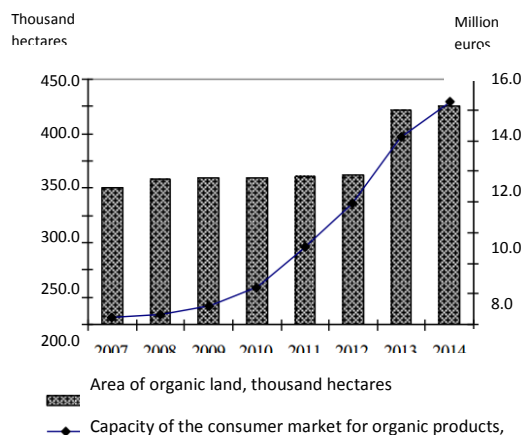


Fig.1. Trends in the development of organic production in Ukraine  
 Source: [5]

Therefore, only for 2010-2014 the capacity of the organic market has increased six-fold. At the same time, the area used for organic cultivation of crops has increased by only 48.3%. This indicates an increase in the market share of livestock products and the products of their processing. However, certified organic enterprises in Ukraine specialize mainly in the production of plant products.

In recent years, the tendency of active filling of the domestic market with its own organic products due to the establishment of own processing of organic raw materials has been observed. In particular, these are cereals, flour, dairy and meat products, juices, syrups, jam, honey, oil, tea, medicinal herbs. Official statistical reviews IFOAM confirm (Figure 2), that if at the beginning of 2003 there were 31 registered organic farms in Ukraine, then in 2014 there were already 182 certified organic

farms, while the total area of certified organic agricultural lands amounted to 400.76 thousand hectares [5].

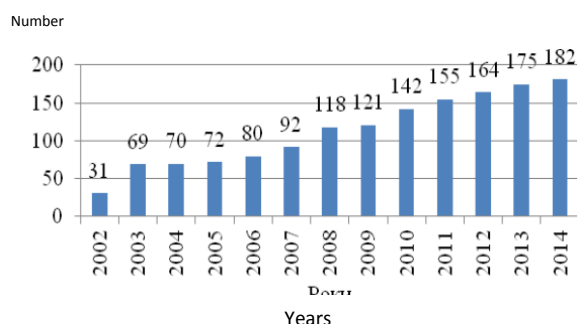


Fig.2. Total number of organic farms in Ukraine  
 Source: [5]

Of all the companies that represent the organic agricultural production, the majority are limited liability companies (54.9%), in addition, 12.1% are farms, 11.0% - private enterprises and 9.8% - sole proprietors. The number of private households is only 4%, that is, 7 units. Among all 95 limited liability companies 57 (60%) are engaged in more than one activity, and 39 of them are not certified producers of organic products, plant protection products, fertilizers. As a rule, these business entities deal with storage and processing of organic products, provide advisory services. 86% of farms are engaged in one type of activity, 72% of farms are engaged exclusively in crop production, and 19% - in the production of both crop and livestock products. All individual farms are engaged in one type of activity, which is directly related to the production of organic products, mainly plant growing.

By the beginning of 2013, there were about 164 certified organic farms operating in Ukraine, which cultivated over 272.9 thousand hectares of agricultural land (table 1). In the 2000s, mainly large and medium-sized integrated agroindustrial enterprises with an average area of 5.3 thousand hectares were engaged in organic agricultural production. The analysis of Organic-world data and their forecast show that the number of organic farms has increased. They were joined by small private farms and enterprises, which led to a decrease in the average size of

organic farms in 2013 to 1.5 thousand hectares [11, 5].

Table 1. The value and dynamics of indicators characterizing the development of agricultural enterprises producing organic products in Ukraine

Indicators	Year							
	2002	2005	2009	2010	2011	2012	2013	2014
Area of agricultural land, mln. Ha	41.8	41.7	41.6	41.6	41.6	41.6	41.5	41.5
The total area of organic agricultural land, thous. Ha	164.4	241.9	269.9	270.2	270.2	270.3	272.9	400.8
The share of the organic agricultural land, % of total area of agricultural land	0.39	0.58	0.65	0.65	0.65	0.65	0.66	0.82
The growth rate of the total area of organic agricultural land	-	1.01	1.08	1.00	0.99	1.00	1.01	1.3
Number of farms, units	31	72	118	121	142	155	164	182
The growth rate of the farms	-	1.03	1.28	1.03	1.17	1.09	1.06	1.12

Source: [5]

The study has determined that most organic enterprises producing agricultural raw materials and food products are concentrated in Kyiv (25%), Vinnytsya (11.1%), Lviv (8.3%) and Volyn (8.3%) regions. A much smaller number of them operate in Zhytomyr, Poltava, Ternopil, Dnipropetrovsk, Zaporizhia, Mykolaiv, Donetsk and Lugansk regions (Figure 3).

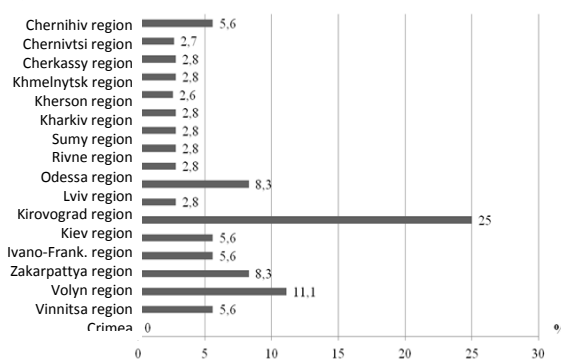


Fig.3. Placement of agrarian enterprises producing organic agro-food products in Ukraine's regions, %  
 Source: [5]

The largest producers of organic products in Ukraine are PE "Argoecology" of Shyshatskyj district, Poltava region, PE "Galkes-Agro" of

Novograd-Volynskyj district, Zhytomyr region and joint-stock company "Nibulon".

At PE "Agroecology" agricultural lands occupy 8,516 ha. In 2011, the company was certified for the production of organic agricultural products (buckwheat, sunflower, rye, barley, winter wheat, oats, alfalfa, sainfoin) and their processing (semolina, buckwheat, wheat, pearl barley and other groats).

PE "Agroecology" specializes in growing wheat, rye, barley, buckwheat, sugar beet, and has a large number of dairy cows. A significant step forward since the introduction of organic farming system has been done in crop production. The yield of grain crops has increased by 97%, and the early grain - by 110-116%. The yield of sugar beets has increased by 64% and sunflower seeds – by 74%, as shown in the table 2.

Table 2. The effectiveness of the implementation of organic farming systems in increasing crop yields in PE "Agroecology" (c/ha)

Years	A total of grains	Winter wheat	Spring barley	Oat	Sunflower	Sugar beet
Yields for 1971-1975 (before implementation)	26.1	29.2	25.2	27.1	16.1	255.0
Average yields for 1986-1995	48.9	63.2	53.3	37.0	28.6	292.0
1991-1995	46.1	57.3	51.2	33.3	21.3	393.2
1996-2000	41.7	43.3	38.2	36.5	24.4	399.6
2001-2005	38.8	48.3	33.8	36.6	16.8	295.0
2006-2010	48.9	56.8	42.5	47.0	23.0	487.7
2011-2014	52.7	61.3	49.4	53.1	27.5	498.6

Source: Enterprise annual reports

Crop rotation, soil tillage systems, fertilization of crops, weeds, pests and diseases protection of crops (physical and prophylactic), systems of machines, systems of care for crops have been worked out in the plant growing. The most productive varieties of crops have been selected from the recommended ones. Cultures are sown no lower than the second reproduction. In the system of soil tillage, the enterprise turned to a minimum ground-protection soil cultivation in 1990. This allowed to reduce fuel consumption and costs of soil cultivation threefold and to conduct technological operations for growing crops within scheduled time.

The introduction of biological farming system of soil protection has a significant impact on the development of the livestock sector. The data in table 3 can prove it. Livestock productivity since the introduction of the organic farming system has doubled. And this is not only a quantitative aspect, the qualitative one is equally important. Ecologically safe feeds give environmentally safe livestock products.

Table 3. Efficiency of organic farming system introduction to increase livestock productivity in PE "Agroecology"

Years	Milk yield per cow, kg	The average increase for fattening, g	Meat produced per 100 hectares of agricultural land, c	Milk produced per 100 hectares of agricultural land, c	Milk obtained, t	Meat obtained, t
1997-1975	2,572	450	66	383	-	-
1986-1990	3,770	471	124	740	-	-
1991-1995	4,431	758	145	1,059	-	-
1996-2000	4,286	696.8	133.8	957.6	2,717.4	362.1
2001-2005	5,090.4	588.8	77.0	780.7	5,548.8	558.0
2006-2010	5,285	763.8	98.6	11,590	8,720.5	7,41.9
2011-2014	5,684	849.2	102.4	1,354.1	9,487.0	9,76.5

Source: Enterprise annual reports

The introduction of a soil organic farming system to a significant strengthening of the financial and economic state of the enterprise (table 4).

Table 4. Key financial and economic indicators of PE "Agroecology"

Years	Gross output, ths. UAH	Gross production per 1 ha, UAH.	Gross output per worker, UAH.
2005	16,980	2,225	34,303
2006	17,333	2,267	36,338
2007	25,120	3,297	49,800
2008	25,385	3,352	54,126
2009	26,674	3,545	58,753
2010	26,987	3,687	61,458
2011	27,168	3,849	64,354
2013	28,264	3,915	67,498
2013	29,030	4,021	69,135
2014	30,247	4,298	72,480

Source: Enterprise annual reports

Thus, PP "Agroecology" can be characterized as an enterprise with a special system of agricultural production, where the introduction of organic farming system contributed to the solution of agronomic,

livestock, economic, social and other problems that ensured the sustainable development of the enterprise.

PE "Galex-Agro" grows products certified in accordance with organic standards, on an area of 5,480 ha. All products of the company are certified by the Institute of Environmental Marketing (IMO, Switzerland), and approved as organic and meets the requirements of the standard Bio Suisse. The activity of the enterprise is controlled by "Organic Standard" and certified in accordance with the requirements set out in Council Regulation (EC) No.834/2007 and No. 889/2008.

The main activity of this enterprise is the production of organic certified crop and livestock products. The main cultivated crops are wheat, spelt wheat, rye, barley, oats, field peas, beans, vetch, buckwheat, millet, soybeans, corn. As for livestock, it is raising of meat-dairy cattle of Simmental breed.

In its activity, PE "Galex-Agro" is guided by the fact that for optimal results in growing grain crops, a correct balance of humus in the soil and the nutrient content is needed. According to the rules, organic farms are not able to use nitrogen fertilizers, and plants are fed only from the soil. Practice shows that many organic farms suffer from a low level of yield and quality of products (for example, low content of protein in wheat), which is a consequence of the negative balance of humus in the soil.

There is a way out of this situation, and the experts from FiBL helped to find it. They provide advisory support to the company within the framework of the project on the development of the organic market in Ukraine. The most effective solution in this case was the introduction of legumes for green fodder (clover and alfalfa) into crop rotation. Swiss experience shows that a minimum of 20-25% of legumes for green fodder significantly improves the situation with nutrients: yields per hectare and product quality increase. Due to this, the structure of the soil improves, microorganisms, worms begin to actively develop in it; the humus balance is restored; the effect of inhibiting the growth of weeds due to the growth of fast-growing legumes and their constant mowing

and subsequent use for feeding animals is achieved.

Thus, the organic growing cannot do without proper rotation. But, if crop production is combined with livestock production, even better effect is achieved, since manure is introduced into fields that require nitrogen. In 2010 in the village of Gulsk, Novograd-Volynskyi district, PE "Galex-Agro" created an innovative milk production complex of European standard with a capacity of 500 heads of cattle for the purpose of developing organic livestock breeding and reproduction of the Simmental meat-dairy breed in Polissya. The average yield per cow is currently 22 liters per day, or 6,700 liters per 305 days of lactation.

Currently, the enterprise is a member of the Swiss-Ukrainian project "Development of organic market in Ukraine 2012-2016", which aims to promote the development of the organic sector in Ukraine and integration of Ukrainian SMEs in international trade in certified organic products. The enterprise activity in the framework of this project, supported by the Research Institute of Organic Agriculture (FiBL, Switzerland), aims to expand the area under organic arable crops and to improve quality and increase the volume of trade in dairy products in Ukraine. Unlike PE "Agroecology", PE "Galex-Agro" exports grown products. Export-oriented organic farming is a common trend. According to the Ministry of Agrarian Policy of Ukraine, about 70% of Ukrainian producers supply organic products abroad. The products grown in Ukraine are mainly exported to the EU (Italy, Germany, the Netherlands, Switzerland, France), to North America (USA and Canada), Russia, Israel and Japan. About 80-90% of all organic products produced in Ukraine, mainly legumes, grain and oil crops, are exported. The rest of the products grown by organic standards are sold in the domestic market, but the lack of appropriate processing and market infrastructure allows to sell such products as organic ones only partially, and the rest is sold as high-quality conventional products. But the overall trend in the domestic market for producers of organic products is

positive, the market for organic products is growing steadily.

It is also worth considering the example of the activity of joint-stock company "Nibulon", which is one of the leaders of the modern Ukrainian market. This is a joint Ukrainian-Hungarian-English agricultural enterprise, co-founded by the Hungarian company Kombiseed kft and the English company Meridian Commodities ltd. This company is one of the largest domestic producers and exporters of agricultural products (wheat, barley, corn, rye, sunflower, etc.). The company has 40 subdivisions located in eleven regions of Ukraine, but is gradually expanding the geography and scale of production activity.

Joint-stock company "Nibulon" is one of the largest domestic producers and exporters of agricultural products (wheat, barley, corn, rye, sunflower, etc.). With its development company gradually expands the geographic scope and the scale of its production activity. The company has 22 production units located in nine regions of Ukraine. Using advanced agricultural technology and equipment, joint-stock company "Nibulon" constantly ensures the implementation of complex technology of cultivation of agricultural products on its own and leased lands, and provides services to other farms with cultivation and harvesting. Diversification of production activities in climatic zones reduces the natural risks associated with harvest losses due to fluctuations in weather conditions in different regions of Ukraine, and provides annual high yields of grains and oilseeds. In addition, by comparing the state of production crops, the reliability of predicting the level of yield in the marketing period increases, and that is important for making commercial decisions.

In recent years the enterprise has increased the amount of land under cultivation by 1.4 times or by 15,923 ha. Most of the land was concentrated in zones of sufficient moisture. With the preservation and some increase in the production of crops in areas of risky agriculture, gradually the proportion of land located in zones of sufficient moisture was increased to 52% of the total amount of cultivated land. Thus, the industrial risks of

under-harvesting from adverse weather conditions (drought) have been significantly reduced, with some increase in the risk of adverse wintering. With the changes in land zoning of the enterprise, there were changes in the structure, reflecting the most appropriate proportion of crops in the regions.

The main factors that today can accelerate the development of organic production in Ukraine include the following [10, 5]:

- (1) the presence of large areas of agricultural land suitable for organic production;
- (2) successful experience (about 40 years) of organic farming in some domestic agricultural enterprises;
- (3) unsatisfied demand for organic products in countries with developed economy, which predetermines their interest in the development of organic production in Ukraine;
- (4) potentially significant capacity of the domestic market.

Among the main external factors hindering the development of organic agricultural production in Ukraine, the following should be distinguished: demand factors, competition, limited product sales, possible changes in the market situation of organic products, instability of domestic markets for agricultural products; exchange rate changes, prices of agricultural machinery, fertilizers and plant protection products, inflation, changes in income levels; not consistent state tax and customs policy; low level of political stability in the country, high level of corruption, etc.

## CONCLUSIONS

During the last 10 years, Ukraine has also demonstrated steady growth of agricultural land, certified organic production and occupies the 20th place in the list of countries with the largest area of organic farmland. The vast majority of domestic organic farms are certified in Vinnitsa, Zhytomyr, Zakarpattia, Lviv, Odessa, Poltava, Ternopil and Kherson regions.

Organic agrarian enterprises are the most widespread in the Kyiv region, where 25.0% of their total number are concentrated, as well



as in Vinnytsia (11.1%), Volyn and Lviv (8.3%), Zakarpattya, Ivano-Frankivsk and Chernihiv (5.6%) regions. The basis of their specialization is the production of grain, legumes and oilseed organic crops. However, in recent years, organic berry and fruit production, with a predominantly export orientation can be characterized as being rapidly developed. Given that the European market for organic fruit products exceeds 1.0 billion euros, domestic organic producers, having resource-competitive advantages, have unlimited opportunities for development in this particular direction.

In order to intensify the processes of increasing the turnover of organic products market in Ukraine, the relevant legislative and regulatory framework for organic agricultural production needs to be improved. Organic agricultural production does not have a functioning state control system that would be accredited at the national and international levels and would encompass control of both organic operators and products. Land reform is unfinished and there is no transparent and civilized market of agricultural land.

In addition, in order to develop the production and market of organic products in Ukraine in the context of social responsibility of agrarian enterprises, it is necessary to: develop and maintain agricultural co-operation; create specialized shops, catering establishments, places for these products in the wholesale markets; promote the export of organic products; organize specialized fairs and exhibitions.

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