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## **DEVELOPMENT OF ORGANIC FARMING IN UKRAINE AS A PROCESS OF INNOVATION DIFFUSION**

### *ROZWÓJ ROLNICTWA EKOLOGICZNEGO NA UKRAINIE JAKO PROCES DYFUZJI INNOWACJI*

**Key words: organic farming, Ukraine, innovation**

*Słowa kluczowe: rolnictwo ekologiczne, Ukraina, innowacje*

**Abstract.** The paper aims to describe the development of organic farming in Ukraine and the prospects of its growth based on the paradigm of innovation diffusion. The paper argues that development of organic farming in Ukraine could be considered not only as a source of positive externality for the economy, but in micro scale, as innovation that generates competitive advantages through food supply chain.

### **Introduction**

Organic farming is assumed as a holistic system of farming which optimizes productivity in a sustainable manner through creation of interdependent agri-eco systems on a given field or farm. Very often it has its market approach, which assumes quality control and marketing system entailing third party certification for production process. Today organic production grows worldwide annually as an alternative system of high value added production [Maciejczak 2009a]. In many cases it is assumed as a chance for several group of farmers to generate the welfare in changing and very competitive market environment. This is a case also for Ukraine. Ukraine, one of the biggest country in Europe with the population of 46 million people with deep fertile black soils is well-known as “grain basket for Europe”. Organic farming and organic market in Ukraine are both still on the initial stage. Very often it is argued that a level of pollution of certain lands is much smaller than that of the Western European countries, which makes it possible to grow products in compliance with the organic standards [Furdychko et al. 2009]. However, the current trend of the large-scale export oriented grain production, lack of any support for the middle and small sized farms as well as absence of the organic production processing and retail network are amongst the main obstacles for organic farming development in Ukraine.

The purpose of this paper is to examine the development and current state of organic agriculture in Ukraine as well as opportunities for its further advancement under the theoretical approach of innovation economy. Another purpose is to suggest the ways of efficient support of organic farming by the state policy measures. The evidence is drawn from wide range of literature studies, statistical data as well as legislative acts studies and public organisations reports. As applied methods are concerned, there were used literature review, strategic management as well as descriptive statistics methods.

### **Organic farming as an innovation in the food supply chain**

The father of innovation, economist Shumpeter described the last stage of innovative process, when the product approaches the market, as innovation diffusion, but that was the rural scientist Rogers, who showed the basic model of innovation diffusion. It overviews the process of change, predicting the adoption behaviour of individuals by looking at their personal characteristics, the time factor and the kind of innovation itself, describing the process in several stages [Wejnert 2002]. Nowak [1987] argues that however this model seems ideally suited to the process of adoption of organic agriculture, which is considered as innovation, it does not fit to the paradigm of productivity, which is a basis of the innovation process. The criticism comes from the assumption

that organic farming is based more on the paradigm of sustainability and environmental issues than productivity and economic efficiency approach. On other hand Żakowska-Biemans [2002] is arguing that the organic farming itself should not be considered as innovative, while the organic products could be assumed as such. Nonetheless researches done by Karafillis and Papanagiotou [2009], who used the stochastic frontier profit function, confirmed that adoption of innovations such as organic practices in a farm results in the increase of profit efficiency. More innovative organic farmers perform better than less innovative ones regarding both profit efficiency and profit loss. This could be maintained according to organic standards, which based on sustainability approach. Moreover Morgan and Murdoch [2000] showed that in case of organic supply chain the innovation could be identified not only at the level of production but also at other stages of the chain from field to fork. They also indicated that the organic food supply chain that distributes knowledge back towards the farm forces farmers to relocalise their understandings of the production process. They argue that in the organic chain the farmers can once again become "knowing agents".

Taking the above into account one could state that organic farming as a system of agricultural production that forms a basis for development of food supply chain is based on innovation approach. This approach comes from both sustainable and efficiency paradigms and leads to diffusion of innovative products that under market conditions could both generate the profit and form a basis for competitive advantage.

### **Organic farming as a source of public goods**

Organic farming on other hand is considered very often as a source of public goods [Maciejczak 2009b]. In that context it could be considered as environmentally friendly agricultural activity that saves rural eco-systems, biodiversity, cultural heritage or rural landscape shall be seen as an externality. It is important to remember that we deal with external effects when certain part of costs or benefits generated by one person's activity is transferred to other persons without relevant compensation. Normally it would be the side-effect of some enterprise which positive or negative consequences are experienced by wider circle of recipients [Baum 2007]. Thus organic farming as a public good can serve as the specific example of the positive externality or an external benefit. In his welfare economics Pigou argued that such positive externality should be supported by certain measures, such approach is called Pigou subsidy [Callahan 2001]. This is because in free market cannot supply them in desired quantities. Due to of non-rivalry and non-excludability consumers are not willing to pay for them. The farmers are also have little incentive to provide public goods as they are not paid for them. This situation can lead to the undersupply of public goods and government intervention is needed to achieve the right level of such goods provision according to the public demand. Thus there is number of instruments that can encourage the provision of public goods by farmers. First of all, public goods can be provided as a by-products of the conventional farming when the farmer voluntarily takes the decision to use less invasive farming technologies or for example to provide better welfare for the farm animals. This choices can be also supported by the governmental subsidies or policies, such as Common Agricultural Policy of the European Union. Another way in which public goods provision can be increased is by defining certain farming practises and products as ecologically safe or environment friendly, that allows to transfer some of the external costs to the consumer who pays higher price for such farm produce. The best examples of this is organic production too.

Thus for Ukraine organic production can be seen as a source of public goods, especially environmental ones, which provision might be supported either by subsidy or by costs transfer to consumers. The later might however limit the diffusion of organic approach by lowering the demand for organic products. The best way to strengthen the diffusion is to provide state aid that from tax payers point of view will be justified by generated positive external effects too.

### **History of organic farming in Ukraine**

Ukraine, despite having some of the best natural soils in the World has most of its arable land in the different grades of degradation. In 1990 about 35% of soils were eroded, 25% had increased acidity and 9.7 were slime and alkali. However, in the past decades the use of chemical fertilizers by farmers has decreased dramatically due to the economic crisis. Because of this decrease of chemical fertilisers and pesticides use Ukrainian soils are restoring their natural fertility and huge areas of black soils can be quickly transformed into soils suitable for organic farming according to the

European organic standards [Vovk 2004]. However the history of organic farming in Ukraine back to the 1970, when Prof. Dr. M Schykula proposed a protective soil preparation system at the Agricultural Academy in Kiev. This system included soil tillage without ploughing, application of organic harvest residues and their incorporation up to depths of 10 cm, and control of physical and biological disease and of pests. In 1979 this system was implemented at the collective farm “Ordzhenikkhidze” in Poltava region. The farm, now called “Obrij” still successfully uses this system [Stroll 2006].

Since the soviet agriculture was totally industrial farming oriented there was no other organised attempts to implement organic farming techniques until 1997, when a group of agricultural specialists from Ukraine visited Institute of Organic Agricultural Production in Frick and a number of organic and biodynamic farms in Switzerland. The following year series of workshops and training seminars were held by Ukrainian and Swiss specialists at the Berezhany Agritechnical College on the topics of production, processing, certification and marketing of organic goods. The book called “Soil Protecting Organic Farming in Ukraine” which described the Swiss model of organic farming was published after this seminars. Many small farmers and large industrial farms were interested in converting to organic farming after this campaign, however this transfer was delayed due to the absence of established supply and marketing chains for organic produce as well as lack of any government support of this initiative.

Swiss-Ukrainian Project on Organisation of Stable Production of Organic Hard Wheat aimed at its export to Switzerland started in the year 2000 with the support of National Agricultural University as well as a number farms prepared to covert. The first party of organic wheat was sent to Switzerland in 2003.

By 2003 in Ukraine already was established about 70 organic farms on the total area of 240,000 ha. Their share in total agricultural land of Ukraine was about 0.6%. Most of farms were big-scale with average hold size of 3000 ha. They produced grains, mostly wheat to be exported abroad. They practically didn't do any animal husbandry.

In 2004 the joint American-Polish organic producer SYMBIO, showed initiative to establish organic farms in L'viv and Transcarpatian regions. The project was assisted by USAID funded Agricultural Marketing Project, and was aimed at implementation of successful cluster model to involve small Ukrainian farms in organic production of vegetables and fruit for export to the EU and USA. This initiative hauled eventually but in 2010 the project was revived.

The dynamics of grows both organically cultivated land and number of farms is shown in the Table1.

**Table 1. Organic farming development in Ukraine in the years 2002-201**  
*Tabela 1. Rozwój rolnictwa ekologicznego na Ukrainie w latach 2002-20100*

Years/Lata	2002	2003	2004	2005	2006	2007	2008	2009	2010
Area in ha/Powierzchnia [ha]	164,449	239,542	240,000	241,980	242,034	248,950	260,000	269,000	270,226
Number of holdings/Liczba gospodarstw	31	69	70	72	80	92	118	138	140

Source/Źródło: Organic Federation... 2011

### **State of the art of organic farming in Ukraine**

Today, Ukraine has all prerequisites for a large-scale implementation of principles of organic farming in the agricultural industry. These are:

- availability of large areas of fertile lands,
- low level of use of mineral fertilizers and pesticides,
- sufficient quantity of manufacturers willing to produce organic farming products and their potential consumers.

Preliminary works in Ukraine specified the main regions suitable for conduction of organic farming. These primarily include North-Poltava region, Vinnytsya-Prykarpattya region stretching for approximately 100 km from Zhytomyr oblast to Vinnytsya, Khmelnytsk and Temopil oblasts, South-Podillya region – includes a small south-eastern part of Vinnytsya oblast, south-western part of Kirovograd oblast, north of Mykolayiv oblast and northern half of Odesa oblast, Certain parts of Kharkiv, Sumy, Chemigiv, Kyiv and Cherkasy oblasts. Overall, there are approximately 7 mln hectares. [Kobets 2004, Furdychko 2009].

After more than 7 years of preparation period, on April 21, 2011 Ukrainian Parliament (Verkhovna Rada) finally adopted The Law on organic production (Register No.7003). But the certification of Ukrainian organic farms in accordance with EU regulations started much earlier and was initiated in the late 1990's by Dutch, German and other European organic traders. Today in Ukraine operates 15 different certification bodies.

Total value of organic production in Ukraine in 2006-2010, varies on the level of 112-160 million Euro per year. Organic grain, oilseeds and beans are exported mainly to the EU. The balance is used as seeds or for own feed purposes or processed for domestic market or export. Big part of certified organic products are consumed locally as conventional products. The main part of the certified organic products available on the Ukrainian market, are imported goods (mainly from EU countries): baby food, tea, coffee, sugar, spices, fruits, vegetables, pasta, chocolates, oils, cosmetics, etc. But the number of organic products of Ukrainian origin, presented on the domestic market is increasing every year. Among them flakes, berries, jams, syrups, herbal teas, juices, fresh vegetables and herbs, dairy and meat products [Organic Federation of Ukraine 2011].

The "State Program of the Ukrainian agriculture development until 2015" sets the aim that by 2015 share of organic products in the total Ukrainian agricultural production to be not less than 10 per cent. In 2008 Organic Federation of Ukraine, authorized by the Ministry of Agriculture, has prepared the Concept of the State Program on the Organic farming development in Ukraine. According to the Ministry, the document to become core of the National Organic Plan in the nearest future.

Main distribution channels of organic products in Ukraine are mainly small shops of natural and organic products in the capital of Kyiv and other big cities such as Lviv, Kirovograd, Dnipropetrovsk, Ivano-Frankivsk, Odessa and many others. Nonetheless, one of the most important obstacles for organic agriculture development in Ukraine is the absence of any in-country distribution and marketing network. According to the data collected from the media in Ukraine there are from 2 to 10 specialised shops selling organic products. There are also occasional health food shelves in the large supermarkets selling organic products amongst other health products, this products are mostly of foreign origin. Vast majority of local organic produce is sold on the farmer's markets (with the exemption of grains, which are mostly exported). There is not a single national network dedicated to the organic produce distribution and promotion. Researches show [Shubravska 2007] that there is growing interest amongst Ukrainian consumers to the organic goods, however without well organised country wide promotional programme it is difficult to turn consumer interest into the considerable demand pull. Practice showed that marketing efforts that are undertaken by the organic producers and some public organisation are insufficient and governmental intervention is necessary in order to increase public awareness and establish national organic products distribution networks [Organic Federation of Ukraine 2011].

It is impossible to underestimate the role of public organisations in Organic Farming promotion and support in Ukraine. In the absence of any considerable organic farming support from the state authorities, public organisations are the main driver of organic agriculture development and promotion in the country. Amongst the most influential organisations are: Organic Federation of Ukraine which is very active in lobbying the organic farmers interests in the government, organising workshops, conferences and seminars for organic producers and other interested persons and promoting organic goods. Since 2009 "Organic UA monthly" hard copy magazine is published by Organic Federation of Ukraine to promote organic food among consumers.

One more public association expressing interest in development of organic agriculture is the oldest and biggest farming association in Ukraine – The Association of Farmers and Land Owners of Ukraine (AFLOU), which organizes about 43,000 small (10 to 100 hectares) and middle-scale (100 to 1,000 hectares) private farms and about 600,000 land-owners who ventured to cultivate their land (2-5 hectares) themselves after the disbanding of the former collective farms. In January 2004 the association's Board established a committee to promote organic farming among its members and support them in conversion to organic methods.

The club of Organic Farming is another well known organisation which specialises in production and promotion of organic gardening goods in Ukraine. This organisations has a well established country wide network of kiosques where they sell organic fertilizers, organic seeds, some gardening tools and even organic cleaning substances. They have an on-line phone-order shop as well. What is important about their products – they are of excellent quality and their price is the same as the price of conventional products or even lower. Every their customer gets a free newspaper that promotes organic agriculture and also contains advice on organic gardening techniques. Table 2 presents SWOT analysis of organic sector in Ukraine.

**Table 2. SWOT analysis of organic sector in Ukraine**  
**Tabela 2. Analiza SWOT sektora rolnictwa ekologicznego na Ukrainie**

Strengths/ <i>Silne strony</i>	Weaknesses/ <i>Słabe strony</i>
High, constantly improving quality of soils/ <i>Wysoka ciągle rosnąca jakość gleb</i> Willingness of farmers to convert organic/ <i>Cheć rolników do zmiany systemu produkcji na metody ekologiczne</i> Availability of local organic farming methods/ <i>Dostępność lokalnych metod możliwych do wykorzystania w produkcji ekologicznej</i>	Absence of agricultural land market/ <i>Brak rynku ziemi rolniczej</i> Absence of state support/ <i>Brak wsparcia państwa</i> Absence of in-country organic goods market/ <i>Brak wewnętrznego rynku żywności ekologicznej</i> Low consumer awareness/ <i>Niski poziom wiedzy konsumentów</i> High cost of certification/ <i>Wysokie koszty certyfikacji</i>
Opportunities/ <i>Możliwości</i>	Threats/ <i>Zagrożenia</i>
Relatively new market to enter/ <i>Nowy rynek</i> Very low labour cost/ <i>Niskie koszty pracy</i> Land moratorium is to be cancelled in 2012/ <i>Likwidacja moratorium na sprzedaż ziemi w 2012 r.</i> Growing World demand for organic wheat/ <i>Rosnący światowy popyt na ekologiczną pszenicę</i> Possible growth of World demand for food and organic food in particular/ <i>Rosnący światowy popyt na żywność ekologiczną</i>	Political instability in the country/ <i>Brak stabilności politycznej</i> Strong international competition/ <i>Wysoka konkurencja międzynarodowa</i> Consumer attitude towards organic produce has not yet been properly studied/ <i>Podjęcie konsumentów do żywności ekologicznej nie jest jeszcze ustabilizowane</i> Undeveloped certification system/ <i>Nierozwinięty system certyfikacji w niektórych segmentach</i>

Sources: own study

Źródło: opracowanie własne

## Conclusions

The history shows that Ukrainian farmers have always had considerable interest in applying organic farming techniques in their holdings. At the same time the state policy of Ukraine as well as its predecessor in the agricultural sector not only did not encourage application of such practices, but also forced industrialization of farms throughout the whole country. Since the beginning of XXI century Ukrainian agricultural soils constantly regenerate as a surprising result of long-lasting economical crisis which provoked lesser use of chemical pesticides and fertilizers as well as return to traditional farming methods in many areas of the country, which might not be considered as regress, but on the contrary, as progress, that brings innovations. As such organic production can establish competitive fundaments of development of agricultural farms, both small and large scale as well as ensure development of other elements of organic based food supply chain. The analysis above showed that the diffusion of organic farming in Ukraine as innovation reached the shift moment from the stage of innovators and is entering the stage of early adopters. In order to use both development effects for the organic supply chain as well as generate positive externality the government action under the umbrella of institutional intervention is needed. The first signs of such action was adoption of organic law. Nonetheless further actions are needed in order to speed up the diffusion process.

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### **Streszczenie**

*W artykule przedstawiono sektor rolnictwa ekologicznego na Ukrainie oraz perspektywy jego rozwoju w oparciu o paradygmat dyfuzji innowacji. Stwierdzono, że rozwój rolnictwa ekologicznego na Ukrainie może być postrzegany nie tylko jako źródło pozytywnych efektów zewnętrznych dla gospodarki, a także w skali mikro, jako innowacje, które mogą stanowić podstawę budowania przewagi konkurencyjnej w zakresie całego łańcucha żywnościowego.*

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