



AgEcon SEARCH
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search

<http://ageconsearch.umn.edu>

aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

Marcin Żekało

Institute of Agricultural and Food Economics – National Research Institute, Warsaw,
Poland

zekalo@ierigz.waw.pl

The economic results of organic agricultural production activities and the prospects for the development of organic farming in Poland

Abstract: *Despite the continuous increase in the number of organic farms and in the areas in which organic methods are used, organic farming remains a niche sector, not only in Poland but also in other European countries. Nevertheless, a form of organic farming can still be attractive for part of farmers, particularly in view of the continuing financial support for this sector. This paper presents the state of organic farming in Poland and the production and economic conditions of agricultural production using the example of major agricultural production activities in organic farms. The results based on Agricultural Products Data Collection System AGROKOSZTY shows that the organic agricultural production is profitable and economically justified. In comparison with conventional production the low level of direct costs in organic production leads very often to higher level of gross margin from particular agricultural activities. The combination of low level of total costs and financial support for organic production gives organic farmers the higher level of income from each studied activity. The production capacity is limited but the production results seems to be not that important in organic farming than the balance between economic results, social conditions and environmental requirements.*

Keywords: *organic farming, organic agricultural production, economic results, development.*

The dynamic development of organic farming in Poland should be considered in the context of the accession to the European Union. Changes are most evident on the basis of quantitative changes in this agricultural sector. Since 2004, the statistics have indicated a regular increase in the number of organic farms (Figure 1).

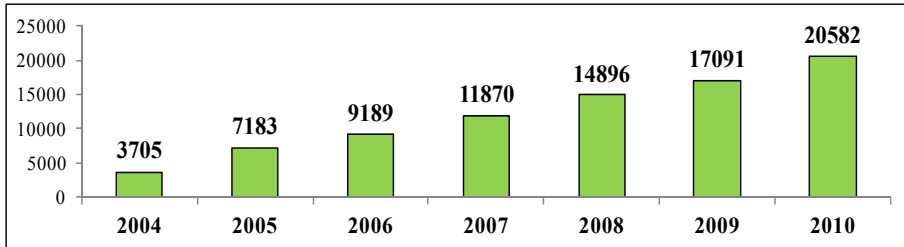


Figure 1. Number of organic farms in Poland in 2004 – 2010.

Source: GIJHARS, 2011.

In 2005-2009 the growth rate in the number of agricultural producers in the new EU member countries averaged 15% annually. At that time in Poland the number of organic farms grew much faster, at an average rate of 25% year on year. Poland is the leader when it comes to new EU members, among which Polish organic farms represent 47.5% of the total number of organic farms. The biggest 'boom' in organic farming could be observed in 2005, when the number of organic farms in Poland nearly doubled (in relation to numbers in 2004). However, the group of organic farms was still very small in the whole Polish farms and in 2010 represented only 1.1% of all agricultural producers. In terms of the number of organic agricultural producers in Poland (17 092 organic farms in 2010), our country is in one of the leading positions in the EU – only preceded by Italy, Spain, Greece, Germany and Austria.

With the increasing number of organic farms the area under organic cultivation was also enlarged. In 2004, this area was almost 84 thousand ha, while in 2010 it was already 519 thousand ha. The growth rate in the case of the area under organic cultivation averaged 38% annually. However, compared to other EU countries the share of organic land in the total land area in Poland (in 2009 it was 2,5%) is not very impressive (Figure 2).

The area structure of agricultural holdings (not just organic farms) in Poland compares unfavourably to other European countries with higher levels of agriculture [Ziętara 2008]. The average farm size in Poland is several times smaller than in France, Germany, Denmark and Great Britain. In this respect it is worth paying attention to the structure of the area of organic farms, which in recent years has remained almost unchanged (Figure 3).

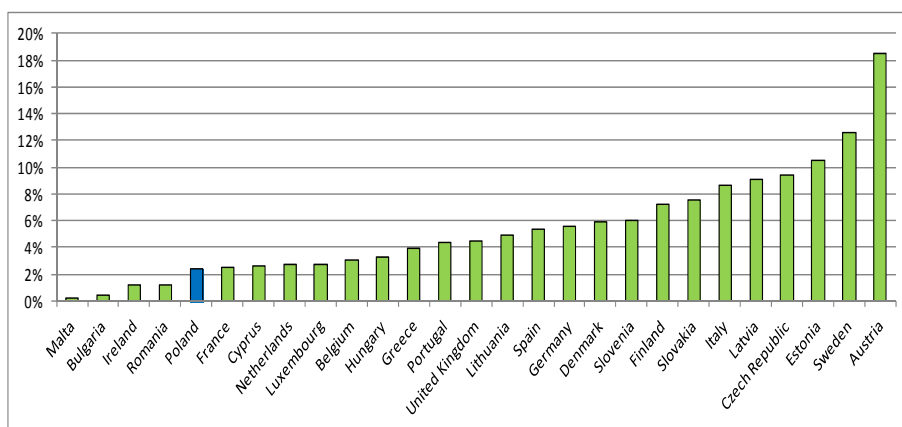


Figure 2. The share of organic area in total agricultural area in EU member states in 2009.

Source: Statistics Research Institute of Organic Agriculture FiBL, 2011.

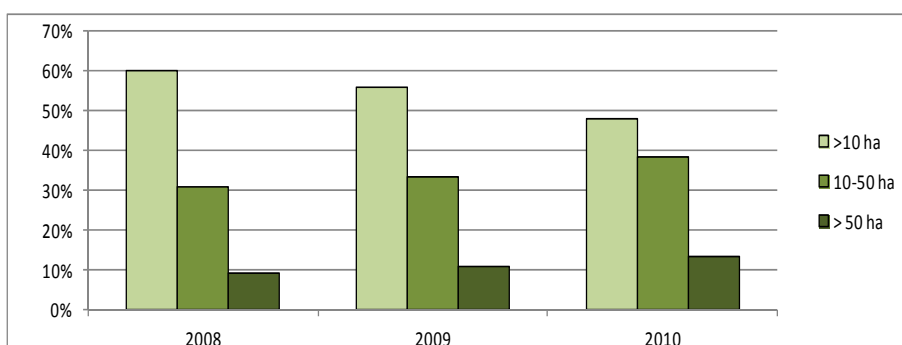


Figure 3. The structure of area of organic farms in 2007-2010 in Poland [%]

Source: GIJHARS (2011)

The share of farms with an area less than 10 ha has gradually decreased - from 60% in 2008 to 48% in 2010, while large-area farms, that is above 50 ha, accounted for from 9 to 13% in 2008-2010. Although the situation has slightly improved, the fragmentation of farms is still a big problem in Polish agriculture.

In the initial phase of the development of organic farming there was mainly an increase in the numbers. According to the assumptions made by the Ministry of Agriculture, Action Plans for Organic Food and Agriculture in Poland for the years 2011-14 not only determine the increase in the number of organic farms but also the development of markets for organic products and the broadly-understood cooperation between entities operating in this market. In respect of the market, the development of organic farming, to a large extent, will depend on the economic results of organic agricultural production. Therefore, attention should be paid to the purely “agricultural” aspect of

this sector of agriculture and it is worth trying to answer the question: what are the prospects for the development of organic farming in the light of the economic results of organic production and the economic situation of Polish organic farmers?

The research carried out for many years in the AGROKOSZTY system aims to determine the costs of organic production, the amount of expenditure incurred and economic surpluses achieved, as well as the importance of subsidies in the income from each agricultural product. Results obtained by organic farmers seem to be important in the context of the opportunities for the development of the organic products market and organic farming.

This study attempted to assess the feasibility of the development of organic agricultural production in the light of the development of organic farming. A comparative analysis of production and economic results of organic farms in relation to the results of conventional farms in Poland was carried out and the results in other European countries were presented. For the presentation of the results a tabular statistics method and graphical methods were used.

Objectives, the source of data, and research methodology

Production activities presented in the AGROKOSZTY system (Data Collection System for Agricultural Products) were studied only in farms with certificates of compliance with organic production rules. Agricultural activities for the study were selected in a targeted way among farms keeping the accounts in the Polish FADN system. Thus, the AGROKOSZTY system data show the economic results of agricultural production activities in farms producing for the market.

The first income category – the gross margin (according to EU methodology) presents the annual value of production from one hectare of cultivation, or from one animal less the direct costs incurred in producing the output [Augustyńska-Grzymek et al., 2000]. In the gross margin account for various crop production activities, as well as livestock production, the production value is the sum of the value of the main products (e.g. seeds, milk) and the by-products that are sold on market (e.g. cereal's straw, calf weaned). The production value is determined by market selling prices or farm-gate selling prices (i.e. on the farm). Only the sales of products obtained from activities in the year in which studies are carried out are subject to registration. Different kinds of losses, such as animal death losses in the production process, are subtracted from the production value. In calculating the production value for various animal production activities, the value of the manure and slurry which are produced on farms is not taken into account.

The direct costs of individual activities of crop and animal production reflect the costs incurred throughout the production cycle. The direct costs of crop

production include seed and planting material, purchased fertilisers (without agricultural lime), pesticides, growth regulators, insurance directly related to this activity, and specialised costs, including specialised expenditures on crop production, professional services, and part-time workers for specialised work. The direct costs of livestock production include the cost of animals to replace the herd, fodder from outside the farm (*mainly from the purchase*), fodder from own farms, rents for the use of forage area leased for less than one year, animal insurance, medicine and veterinary drugs, veterinary services (*e.g. insemination*), specialised costs (*specialised expenditures on livestock production, professional services, part-time workers for specialised work*).

In the AGROKOSZTY system own and external labour input into work related to the activity is also recorded. This record allows us to determine the labour intensity ratio of the activities under research.

The paper presents the income from activity account which is calculated as follows:

- Total production value**
- *Total direct costs*
- = **Gross margin without subsidies**
- *Actual indirect costs (excluding the cost of external factors)*
- = **Gross value added from activity**
- *Depreciation (estimated indirect costs)*
- = **Net value added from activity**
- *Cost of external factors*
- = **Income from activity without subsidies**
- + *Subsidies*
- = **Income from activity**

The income from activity is the surplus representing the amount for unpaid own production factors (labour, land and capital) and management fees. Indirect costs are incurred on a farm in connection with its operation or proper functioning. They include the following categories: actual indirect costs, depreciation and the cost of external factors. Subsidies are added to the income account in the AGROKOSZTY system, but only those that directly relate to the activity. In organic production these include supplementary and organic payments and animal payments.

Results

This study covers production and economic results of selected major agricultural crop activities (winter wheat, edible potatoes) and livestock activities (dairy cows) in surveyed individual organic farms using the AGROKOSZTY system. On this basis, an attempt will be made to assess the income situati-

on of the main production activities conducted on organic farms. Due to the small representation of farms in the research samples, and the variability of objects, the results should be approached very carefully and they should not be translated to the entire group of organic farms in Poland. However, many years of research indicate that economic results of these farms reflect trends due to changing external economic conditions. In purpose of comparison of yields, selling prices, economic results of organic production the selection of available accountancy and statistical data from the conventional farming are taken into account.

The calculations are presented in Euro (according to exchange rates of European Central Bank for particular year of survey).

Yields of agricultural organic products

To show the differences between the yielding of agricultural products in organic surveyed farms the informations for individual agricultural farms in Poland were taken according to Central Statistical Office (CSO). In general for the organic crop production the level of yielding is lower than in conventional crop production (Figure 4 and 5). In particular years of survey the organic winter wheat yield was in the range from 71% to 85% as a percentage of conventional yields referred to CSO data. In case of organic edible potatoes yields the situation was similar but the higher level of yielding was observed in 2005 as well. It is often reported that the organic yields in developing countries are often higher than those from conventional farming. But generally in Europe crop yields are lower in organic farming than in conventional system (Offermann Nieberg 2000).

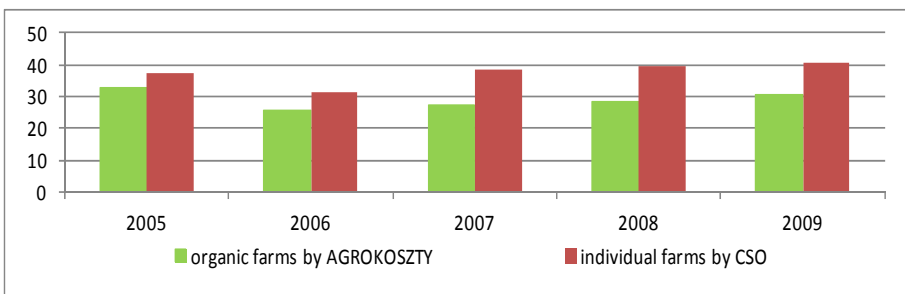


Figure 4. Winter wheat yield [in dt per ha] in surveyed organic farms in Poland

Source: AGROKOSZTY and CSO database

In case of dairy cows the organic milk yield remained on lower level throughout the years of surveys (Figure 6). In comparison the milk yield in surveyed organic farms presented on average 75% of milk yield in conventional farms. In EU countries a typical performance is in the range of 80% to 105% of that on comparable conventional farms (Offermann Nieberg 2000).

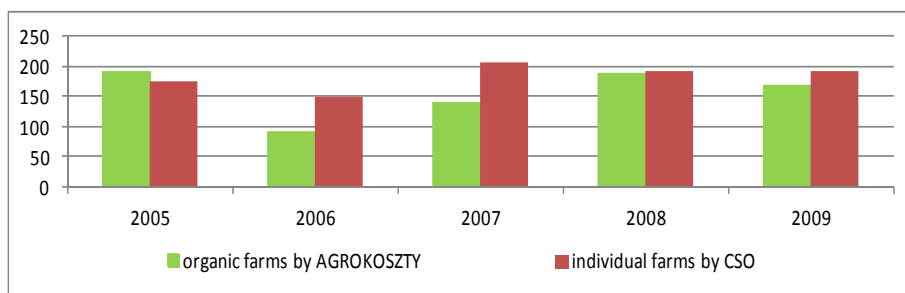


Figure 5. Edible potatoes yield [in dt per ha] in surveyed organic farms in Poland

Source: AGROKOSZTY and CSO database

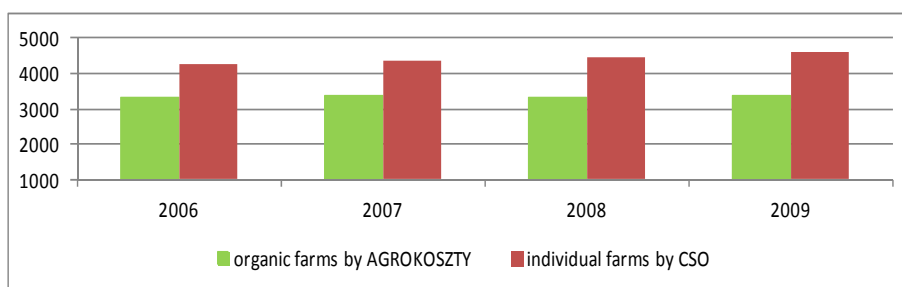


Figure 6. Milk yield [in litre per cow] in surveyed organic farms in Poland

Source: AGROKOSZTY and CSO database

Prices for organic agricultural products

The compensation for the lower efficiency of agricultural production in organic farms should be the higher selling price for their agricultural products compared to conventional products (Figure 7). The prices for winter wheat were not significantly different for organic and conventional production. The higher prices (price premium) for organic edible potatoes were observed in range of 30-80% in particular years. However, not always the organic agricultural product is aimed on the organic market of food and processing and they did not receive the price premia (e.g. organic milk). In case of marketable organic products the price premia is often received by organic farmers. Organically produced wheat is often sold at prices of 50-200% above the conventional prices. The bigger differences in prices for edible potatoes were observed, where the price premia for organic potatoes was in the range from 30 to 700% (caused by large differences in potatoes yielding in general). The prices for organic milk were in the range of 10 to 30% (the higher prices for organic milk were noticed in Denmark).

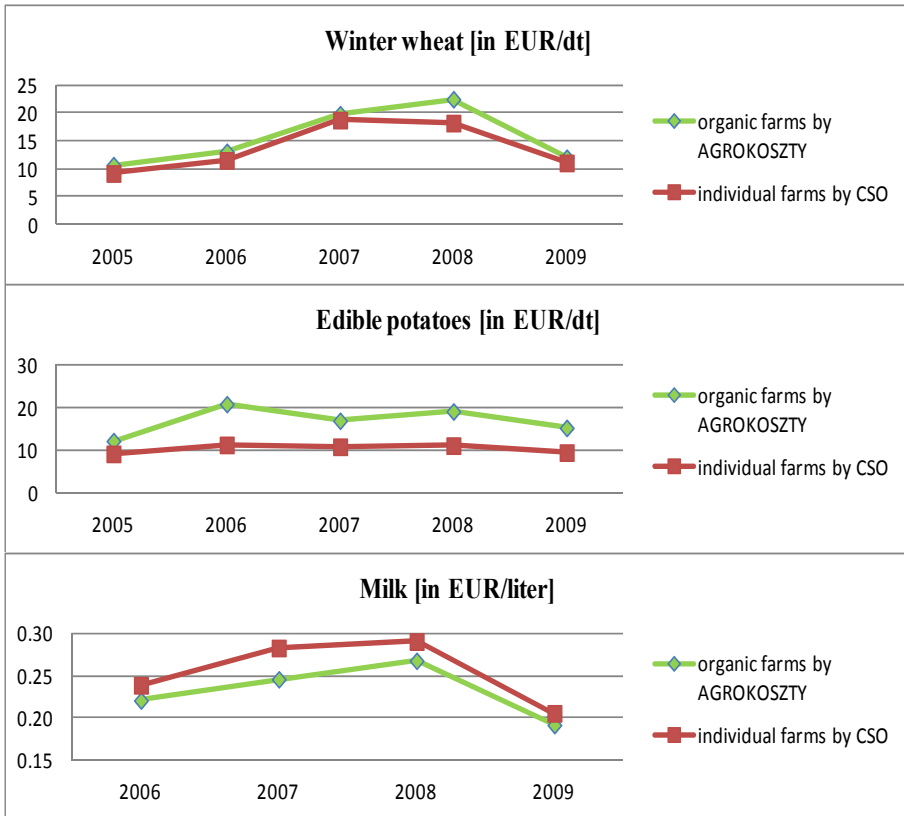


Figure 7. Prices for agricultural products in organic and individual (conventional) farms in Poland.

Source: AGROKOSZTY and CSO database

Economic results of organic agricultural products

To show the situation of agricultural activities the economic results achieved by surveyed organic farms were presented. The collected data in AGROKOSZTY system allow to calculate the value of individual activities production, costs incurred and income from particular activities. In order to compare these results the economic results from conventional farms (which also participated in the research of AGROKOSZTY system in the same year) were taken into consideration.

The organic production in surveyed organic farms was performed on average on lower scale (in the terms of acreage or the number of cows) – mostly in small family farms. The total production value in general for organic agricultural products was not satisfactory for farmers (except the organic edible potatoes production). But the finally economic results of organic production (per ha of cultivation or per one dairy cow) were better or close to the results of conventional production (Table 1 and 2).

For the accounts in surveyed farms the most visible feature was that the total costs are lower in organic farming (with the exception in edible potatoes production in 2008). For the organic winter wheat the total costs were about 50% lower and for organic milk production 40-45% lower than in conventional production (mainly due to lower level of direct costs incurred in the organic production). The reduction of direct costs in organic production followed by strong limitation of using fertilizers or plant protection products for crop production and using mostly fodder from own farms for livestock production. Those relations are reported also in other economic studies [Offermann, Nieberg 2000].

Table 1. The economic results achieved by the groups of farms for crop production activities (winter wheat and edible potatoes)

Specification	Average results for surveyed farms							
	WINTER WHEAT				EDIBLE POTATOES			
	in 2006		in 2008		in 2005		in 2008	
	organic	conventional	organic	conventional	organic	conventional	organic	conventional
Number of farms	12	145	19	152	11	126	22	92
Area under cultivation [ha]	1.9	18.1	2.9	20.7	1.2	4.1	1.1	5.1
Yield [dt/ha]	25.6	44.5	28.4	61.2	192.0	250.0	189.0	261.0
Selling price [EUR/dt]	13.2	12.5	22.4	14.8	12.2	9.2	19.1	10.3
	Per ha of cultivation							
Total production value [EUR]	338	561	635	907	2348	2295	3606	2681
Total direct costs [EUR]	32	225	93	324	395	708	663	869
Gross margin without subsidies [EUR]	306	336	542	583	1953	1587	2943	1812
Actual indirect costs ^a [EUR]	96	116	126	172	441	379	611	489
Gross value added from activity [EUR]	210	220	416	411	1512	1208	2332	1323
Depreciation [EUR]	80	72	102	120	394	324	492	370
Net value added from activity [EUR]	130	148	314	291	1118	884	1840	953
Cost of external factors [EUR]	16	38	27	71	127	145	213	183
Income from activity without subsidic [EUR]	114	110	287	220	991	739	1627	770
Subsidies ^b [EUR]	235	78	253	77	150	-	171	-
Income from activity [EUR]	349	188	540	297	1141	739	1798	770
TOTAL COSTS [EUR]	224	451	348	687	1357	1556	1979	1911
Total labour input [hours]	20.0	12.0	15.7	9.9	143.7	110.7	221.2	94.9
of which own labour input [hours]	16.0	10.1	15.3	8.4	108.3	81.4	111.2	64.1

^a Actual indirect costs without the cost of external factors.

^b Subsidies include the supplementary and organic payments.

Surveys showed that the input of labour in agricultural production was always higher in organic farms than in conventional (Table 1 and 2). In both group of farms (organic and conventional) farmers mostly used own labour forces. The income from activity for crop production allowed to pay for own work on a higher level (or at least on the same level) compared to con-

ventional production. As opposed to this situation in case of dairy cows the own work was paid better in conventional farms.

Table 2. The economic results achieved by the groups of farms for livestock production activity (dairy cows).

Specification	Average results for surveyed farms			
	DAIRY COWS			
	in 2006		in 2009	
	organic	conventional	organic	conventional
Number of farms	30	158	20	167
Annual average number of dairy cc [head]	6.5	20	8.9	23
Yield [litre]	3341	5474	3346	5506
Selling price UR/litre	0.22	0.25	0.19	0.22
	Per dairy cow			
Total production value [EUR]	923	1570	848	1384
Total direct costs [EUR]	261	587	291	581
Gross margin without subsidies [EUR]	662	983	557	803
Actual indirect costs ^a [EUR]	174	222	153	229
Gross value added from activity [EUR]	488	761	404	574
Depreciation [EUR]	142	202	177	218
Net value added from activity [EUR]	346	559	227	356
Cost of external factors [EUR]	22	55	26	67
Income from activity without sut [EUR]	324	504	201	289
Subsidies ^b [EUR]	127	50	210	63
Income from activity [EUR]	451	554	411	352
TOTAL COSTS [EUR]	599	1066	647	1095
Total labour input [hours]	259	138	227	122
of which own labour input [hours]	258	126	226	113

^a Actual indirect costs without the cost of external factors.

^b Subsidies include the supplementary, organic payments and livestock payment (only in 2009) in

Importance of payments for economic results of organic production

The amount of subsidies involved to organic production improved significantly the income from activity, except the edible potatoes production (Figure 8). In surveyed organic farms for the crop production the share of subsidies in income from activity was 47% for winter wheat and 10% for edible potatoes. In case of dairy cows the half of the income from activity was covered by the associated payments. The share of subsidies in income from activity was evidently higher in organic production than in conventional production (for surveyed conventional farms with winter wheat the share was about 26%; for dairy cows – about 18%). In case of edible potatoes conventional farmers did not receive the supplementary payments connected directly with this agricultural activity.

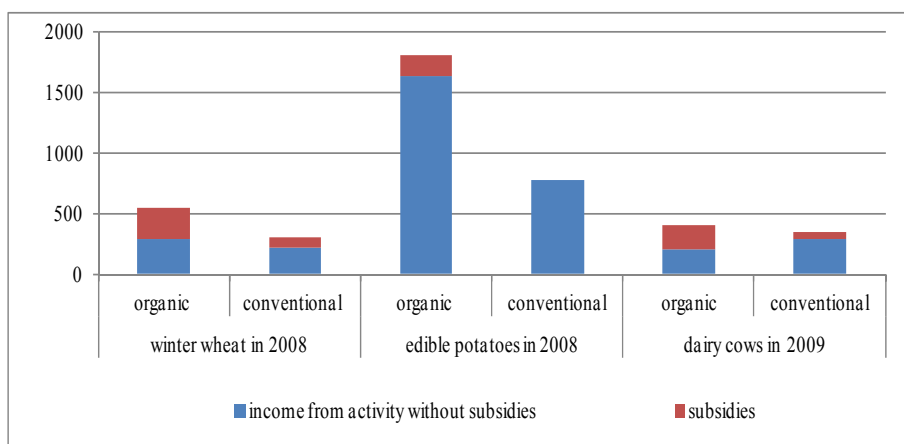


Figure 8. The level of income from activities per ha or dairy cow (in Euro) in organic and conventional farms surveyed in Poland (actual data from AGROKOSZTY system)

Organic farming is supported in all EU countries within the framework of agri-environmental programmes. The level of payments received by organic farmers in particular countries may be very different. In countries developed in organic farming (Austria, Denmark, Germany) the share of these payments in profits is very similar (about 20%) in variable types of farming (arable, dairy and mixed farms). But in Great Britain, for instance, the share of subsidies is low because of low level of payments in general.

Conclusions

On the basis of considerations and the results of research presented, a few conclusions about the possibility of development of organic farming and organic agricultural production can be formulated.

1. At the EU level organic farming in Poland is developing most rapidly in terms of the increase in the number of farms and acreage under organic crops. Although in terms of the share of land of these crops in total land area Poland is ranked in a very distant place among EU countries. It should be noted that in the whole of Polish agriculture the organic sector is still a niche one. This is undoubtedly affected by the unfavourable area structure of organic farms, although the substantial fragmentation of farms is a very difficult problem in the entirety of Polish agriculture. Small farms are generally not able to engage in modern farming and participate in production for market needs (Ziętara 2008). This also applies to agricultural organic farms. In this context, it is difficult to anticipate the rapid development of the market for organic agricultural products on the basis of the existing structure of organic farms in Poland.

2. The results from crop and livestock activities presented show a smaller production capacity in organic farms than in conventional farms. The production efficiency obtained is much lower than in intensive farming. The increase in economic efficiency in organic farming is limited by strict rules of production, in particular, regulations limiting the use of mineral fertilisers and pesticides, which, in the long run, may hinder the improvement of economic efficiency (Runowski 2009). It can be concluded that organic farming cannot compete with intensive farming, but on the other hand, the production aspect is not the main objective of organic farming. Maintaining a balance between economic conditions and ecological (environmental) requirements, while respecting social norms and values and technological development, seems to be more important.
3. Organic farmers demand compensation for the lower efficiency of agricultural production in the form of higher selling prices for their agricultural products compared to conventional products. Such price premiums are implemented for products aimed at the organic food or processing market. However, products produced on organic farms are often sold on the conventional market, and obtained prices are even lower than the prices of the same products from conventional farms (e.g. milk). The other side of the coin is also important, namely the purchasing opportunities of consumers. Reports from the German market show that consumers do not want to accept significantly large price differences between organic and conventional products. In the countries where citizens seek savings also in planning the food budget, relatively expensive organic products will not be very popular.
4. In the light of the results of years of the research into organic products in the IAFE, and reports from other countries, it can be concluded that organic production is profitable. At the level of individual production activities organic farmers often have the upper hand through higher gross margins than in conventional production and the income from agricultural activities. This is mainly caused by lower production costs, but it is worth noting that the labour expenditure incurred was much higher than in conventional farms.
5. In the income generated from organic production activities subsidies are of great importance. However, creating and strengthening competitive advantages allowing competition on the single EU market should be based more on market mechanisms than on subsidies from the EU budget (Ziętara 2008). It should be emphasised, however, that even without financial support in organic farms in the presented agricultural production activities a economic surplus was obtained in the category of income from activities without subsidies (i.e. after payment of all costs associated with the production activity), whose level was mostly higher in comparison with income without subsidies from conventional production.

Prospects for organic farming determined by the assumptions of the future Common Agricultural Policy will certainly serve to maintain the interests of farmers-beneficiaries in agri-environmental programmes. Under financial support after 2014 an ecological payment system is proposed (as an obligatory payment for all countries) in the case of “*agricultural practices that have a beneficial impact on the climate and environment*”. Further support of agri-environment and climate actions is planned, in which the organic farming area is determined as a separate action. Therefore, a further increase in the number of organic farms in Poland should be expected, while organic agricultural production will remain a niche activity, and the market for organic products will find purchasers, but only among a limited group of consumers.

Literature

- Augustyńska-Grzymek, I., Goraj, L., Tarka, S., Pokrzywa, T., Skarżyńska, A. (2000): *Metodyka liczenia nadwyżki bezpośredniej i zasady typologii gospodarstw rolniczych*, FAPA, Warszawa, Poland.
- CSO (2009): Skup i ceny produktów rolnych w 2008 r., Warszawa, Poland.
- GIJHARS (2011): Raport o stanie rolnictwa ekologicznego w Polsce w latach 2009-2010. Warszawa, Poland, www.ijhars.gov.pl
- IAFE-NRI (2004): Wyniki uzyskane przez indywidualne gospodarstwa rolne prowadzące rachunkowość w 2002 roku, Warszawa, Poland.
- IAFE-NRI, AMA, MARD (2008) *Rynek mleka nr 34*, Warszawa, Poland.
- MARD (2009): Agriculture and food economy in Poland, Warszawa, Poland.
- MARD (2011): Plan działań dla żywności i rolnictwa ekologicznego w Polsce na lata 2011-2014, Warszawa, Poland.
- Nachtman, G., Żekało, M. (2011): Wyniki ekonomiczne wybranych ekologicznych produktów rolniczych w latach 2005-2009, Warszawa, Poland.
- Offermann, F., Nieberg, H. (2000): Economic performance of organic farms in Europe, *Organic Farming in Europe: Economics and Policy*, Vol. 5.
- Runowski, H. (2009): Rolnictwo ekologiczne - rozwój czy regres? *Roczniki Nauk Rolniczych*, SERIA G, t. 96, z. 4.
- Skarżyńska, A., et al. (2010): Wyniki ekonomiczne wybranych produktów rolniczych w 2009 roku, IAFE-NRI, Warszawa, Poland
- Skarżyńska, A. (2010): Wyniki ekonomiczne wybranych produktów rolniczych w latach 2005-2008, IAFE-NRI, Warszawa, Poland.
- Ziętara, W. (2008): Wewnętrzne uwarunkowania rozwoju polskiego rolnictwa, *Roczniki Nauk Rolniczych*, SERIA G, t. 94, z. 2.