

*Wioletta WRZASZCZ, Józef ST. ZEGAR*¹

STRUCTURAL CHANGES AT THE POLISH ORGANIC FARMS IN 2005-2010

SUMMARY

Organic farms are the demanded and the fast-growing form of environmental-friendly agriculture. The use of organic methods of agricultural production in accordance with the requirements of the soil, plants and animals characterizes this group of farms. Therefore, organic farms fit in with the concept of sustainable development of agriculture and rural areas.

The purpose of this article is to present selected structures of organic farms against the background of individual agricultural holdings in Poland and the changes that have occurred in this scope in 2005-2010. This article focuses on the following structures of agricultural holdings: area, production orientation, income and social. In order to compare these structures, the relative index of the structure similarity has been applied. There were used the Central Statistical Office's data.

In the years 2005-2010, the significant increase in the number of organic farms was observed, prompted by government financial instruments and obligatory environmental standards imposed on agricultural holdings. Factors such as demand and prices were less important. The analysis of structures proved significant differences between organic farms and all individual agricultural holdings in Poland. The structural changes in organic farms are more intensive due to the significant increase in the population of farms characterized by the larger utilized agricultural area and the simplified structure of production. These farms were also managed by farmers with a higher level of education.

Keywords: Organic farms, Structural changes in agriculture, Poland, the Central Statistical Office data.

INTRODUCTION

Organic farms represent one of the more interesting and prospective forms of environment-friendly agriculture. Their distinctive feature is the use of organic production methods – in line with the soil, plant and animal requirements. Thus they comply with the concept of sustainable development of agriculture and rural areas.

So far, organic farms constitute a niche form of agriculture, although their number rapidly grows (Stolze and Lampkin, 2009). In Poland, agricultural production with the use of organic methods was carried out by only 1,787

¹ Wioletta WRZASZCZ (corresponding author: wrzaszcz@ierigz.waw.pl), Józef ST. ZEGAR Institute of Agricultural and Food Economics – National Research Institute, Warsaw, POLAND. Paper presented at the 5th International Scientific Agricultural Symposium "AGROSYM 2014". Notes: The authors declare that they have no conflicts of interest. Authorship Form signed online.

organic farms in 2001, out of which 669 were certified farms and 1,118 were in the process of transformation into organic production. In 2010, already 12,901 farms had the certificate of an organic farm, and another 7,681 farms were in the process of transformation. At that time, the utilised agricultural area (UAA) of certified farms increased from 12.9 thousand hectares to 308.1 thousand hectares, and in case of farms in the process of transformation: from 25.9 thousand hectares to 211.0 thousand hectares, respectively. In 2010, the total utilised agricultural area of farms conducting production with the use of organic methods amounted to 519 thousand hectares². The pace of growth increased especially fast, both in terms of the number of organic farms and their utilised agricultural area, after Poland's accession to the European Union (2004) (Toczyński, Wrzaszcz and Zegar, 2013).

The increase in the potential of organic farms in Poland should be considered as the positive and desired direction of agricultural development, which is due to many environmental, economic and social benefits that they bring (Runowski, 2012), as well as their compliance with the future-oriented model of agriculture basing on renewable resources and friendly to both the natural and social environment of rural areas (Zegar, 2012). This article aims at presenting the selected structures of organic farms against the background of individual farms in Poland and changes that occurred in this scope in 2005-2010.

MATERIAL AND METHODS

The research focused on individual farms using organic methods of agricultural production (organic farms) that have a certificate given to them by a certifying authority or that were in the process of transformation into organic production methods (under the control of the certifying authority) in 2005, 2007 and 2010. The analyses used public statistics data. In case of 2005 and 2007 the data come from the research on the structure of farms carried out by the Central Statistical Office (CSO), while the data of 2010 were gathered in the course of the National Agricultural Census 2010.

The selected features of organic farms were presented against the background of the individual farms in total. In the same setting the structures of farms were also compared, namely: agricultural area, production orientation, income sources and farmers' education.

The paper uses the relative index of structure similarity (ISS, formula 1) to compare the production and economic structures of farms. This index enables to examine the differences and similarities of structure between two groups of objects considering the same feature. It is used to compare the structures of

² It should be mentioned that in 2011 in the European Union the number of organic farms amounted to 186 thousand having 9.6 million hectares (5.4%) of UAA. The greatest part of land covered by organic agriculture are pastures (45%), followed by land under cereal cultivation (15%) and permanent crops (13%), (Agra Europe, 2013). In Poland, according to GIJHARS data there were 26.4 thousand of organic farms having 662 thousand hectares of organic land by the end of 2012.

different groups at the same time (in the same period) considering a given feature or (and) a change in the structure of a given group over time. It assumes the value from the range of [0; 1], the closer the values are to one the more similar are the structures of researched groups. The following ranges of the index value were adopted for the needs of interpretation: very large similarity 0.9-1.0; large 0.8-0.9; moderate 0.7-0.8; small 0.6-0.7; very small 0.5-0.6; no similarity ≤ 0.5 (Ostasiewicz, Rusnak, and Siedlecka, 2006).

$$ISS = \frac{\sum_{i=1}^n \min(w_{1i}, w_{2i})}{\sum_{i=1}^n \max(w_{1i}, w_{2i})} \quad (1)$$

where: $i = 1, 2, \dots, n$;

$\min(w_{1i}, w_{2i})$ – minimum value of the index in the compared groups 1 and 2;

$\max(w_{1i}, w_{2i})$ – maximum value of the index in the compared groups 1 and 2.

RESULTS AND DISCUSSION

The number of organic farms taken into account in the CSO research increased from 3,998 in 2005 to 17,160 in 2010, i.e. over 4 times (Table 1). This was accompanied by changes in the production and economic potential of organic farming – group of organic farms. In 2005-2010, the utilised agricultural area at the disposal of organic farms increased nearly by 7 times, labour input increased by 3 times and livestock population by 4 times, while standard gross margin increased only by 3 times. The data show that agricultural production with the use of organic methods is undertaken by farms with increasingly growing acreage of utilised agricultural land, but smaller labour inputs, lower livestock population and smaller economic strength (standard gross margin).

Visibly growing trends in case of organic farms were mainly the result of legal regulations (concerning environmental standards imposed by agricultural producers, agri-environmental programmes encouraging to environmental activities and financial incentives), as well as a change in the preferences of consumers towards non-processed food of high nutritional values (Łuczka-Bakuła 2007). In Poland the major incentive to transform the farm into organic production is constituted by subsidies to organic production. These subsidies are sometimes criticised because they disrupt the optimum allocation of resources (Offermann, Nieberg and Zander, 2009). Demand, however, still plays a secondary role. In other words, the transformation from “pushing” organic production (subsidies to producers) to “pulling” consumer’s demand has not yet occurred³.

Despite relatively high dynamics of organic farming development it is still a niche form of agriculture, which on its path to development has to overcome the barrier of competitiveness as compared to cheaper products of traditional agriculture. However, it should be emphasised that the food quality and environment-friendly agricultural practices are more and more often perceived

³ Such transformation has already occurred in American agriculture (Dimitri and Oberholtzer 2005).

and recognised by the society, which gradually translates into a demand for organic products (Babicz-Zielińska 2010).

Organic farms are significantly different from the overall group of individual farms as regards basic features: utilised agricultural areas, labour inputs, livestock head age and standard gross margin. The differences between these farms intensify over time (Table 2).

Organic farms differ in terms of area structure from the individual farms in total (Chart 1). The share of farms with the area of over 5 hectares among organic farms was 69% in 2005 and 86% in 2010, while in the population of individual farms it was 30% and 37%, respectively. The value of index of area structure similarity for organic and all farms in 2005 amounted to only 0.43 and in 2010 it was even lower: 0.34, which indicates intensification of differences between these two groups regarding this structure. The greater area of organic farms than of conventional farms is caused by the economic calculation – smaller value added per area unit – which preconditions the needs to pursue farming on greater area and to search for external sources of financial support, including those mainly taking on the form of governmental programmes.

Table 1. Production potential of all and organic farms^a

No	Specification	2005		2007		2010	
		Total	Organic	Total	Organic	Total	Organic
1	Number of farms ^a	2,472.8	3,998.0	2,387.2	8,335	1,886.9	17,160
2	Agricultural Area in ha	13,605.8	80.7	14,205.4	190.0	13,385.8	552.9
3	Labour input in AWU ^b	2,246.9	7,126	2,245.8	13,367	2,052.6	23,929
4	Livestock in LU ^c	7,222.5	26,894	7,577.8	50,874	6,567.8	107,828
5	Standard Gross Margin in ESU ^d	8,209.8	50,055	7,901.8	85,350	6,474.6	148,418

^aData for farms in total given in thousands; ^b1 AWU (Annual Work Unit) is equivalent to full-time, or 2,120 hours of work a year; ^c1 LU (Livestock Unit) is a conversion unit of farm animals with a mass of 500 kg (Toczyński, Wrzaszcz and Zegar, 2013); ^d1 ESU (European Size Unit) constitutes the equivalent of EUR 1,200, it is defined with the use of the sum of standard gross margins of all types of agricultural activities.

Source: Prepared on the basis of the Central Statistical Office's data of the Agricultural Census 2010.

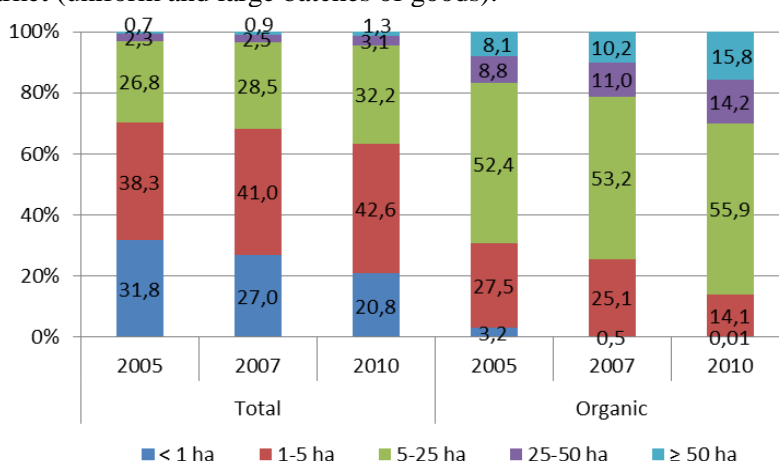
Table 2. Average features of all and organic farms

No	Specification	2005		2007		2010	
		Total	Organic	Total	Organic	Total	Organic
1	Agricultural Area in ha	5.50	20.19	5.95	22.80	7.09	32.22
2	Labour input in AWU	0.91	1.78	0.94	1.60	1.09	1.39
3	Livestock in LU	2.92	6.73	3.17	6.10	3.48	6.28
4	Standard Gross Margin in ESU	3.32	12.52	3.31	10.24	3.43	8.65

Source: Prepared on the basis of the Central Statistical Office's data of the Agricultural Census 2010.

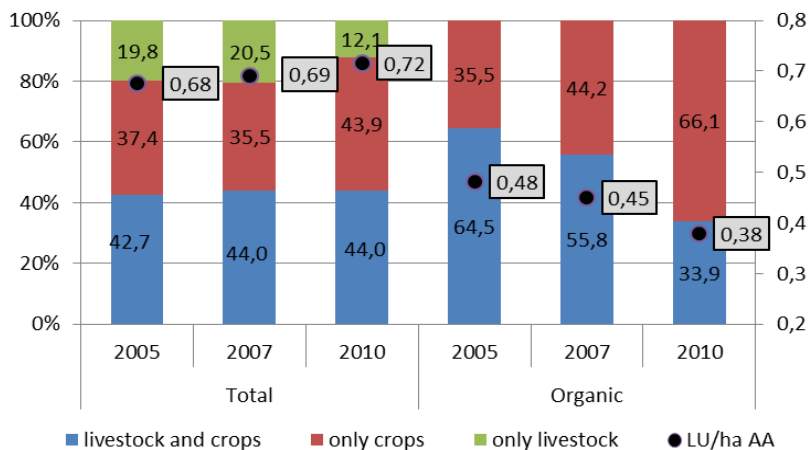
Changes in the agricultural production orientation observed in the farms population are even better visible in the group of organic farms (Chart 2). This is manifested in the structures corresponding to the orientation: ISS in case of all farms for 2005-2010 amounted to 0.86, while for organic farms it was lower 0.53 – which attests to a very small degree of similarity between the structures of organic farms in the analysed period and thus to progressive simplification of agricultural production. In the population, the group of bi-oriented farms (with plant and animal production) is stable, considering their share. This is an optimistic observation given the need and necessity to implement the principles of sustainable development which indicate the importance of a closed circuit of organic matter and nutrients within a farm. Whereas the share of such farms among organic farms is clearly decreasing.

However, what changes in the population of individual farms is the share of farms oriented towards animal production which do not exist in organic farming since organic farms are required to use agricultural land. Changes that take place in the group of organic farms are not beneficial in environmental terms. In the researched period the share of bi-oriented organic farms dropped by half (from 65% to 34%). Organic farms more and more often are targeted only at plant production, both traditional – connected with farming on arable lands, as well as orchard production, while part of them uses only permanent grasslands – meadows and pastures. Therefore livestock is being limited, or even entirely eliminated. This is connected with the possible labour inputs (organic farming is far more labour-intensive than traditional farming), economic factors and animal production requirements within the scope of structure of field crops, and also – or primarily – the need to narrow specialisation of agricultural production forced by the market (uniform and large batches of goods).



Source: Prepared on the basis of the Central Statistical Office's data of the Agricultural Census 2010

Figure 1. Area structure of all and organic farms



Source: Prepared on the basis of the Central Statistical Office's data of the Agricultural Census 2010
 Notice: Stocking density in LU/ha at farms keeping livestock

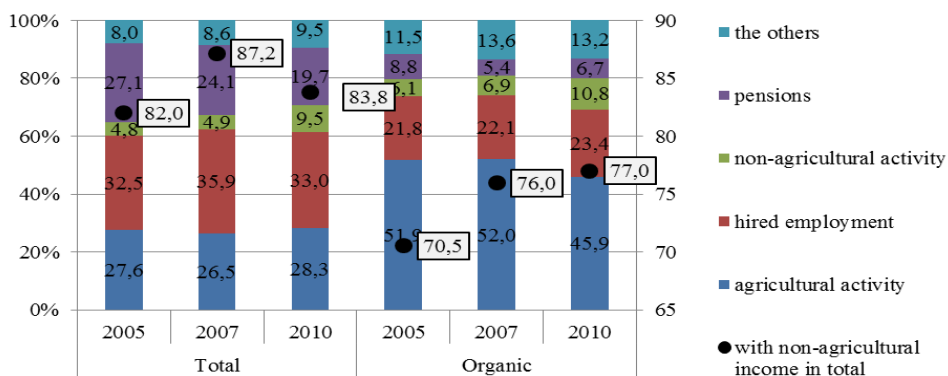
Figure 2. Structure of production orientation of all and organic farms

The data providing for simplification of agricultural production in organic farms contradict the idea of organic production, in line with which these farms should be bi-oriented with broad structure of agricultural crops ensuring a closed circuit of organic matter and fertilising components within a farm. Since animal breeding predetermines proper functioning of the agricultural ecosystem, which is the guiding principle of organic farming (Tyburski and Żakowska-Biemans, 2012).

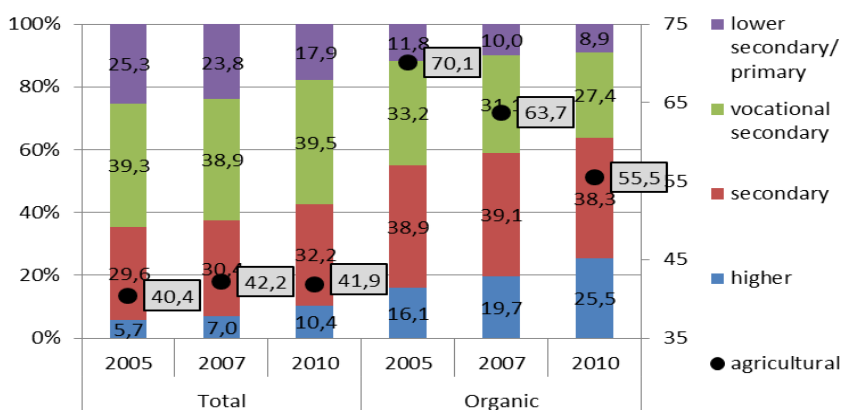
The basic economic aim of business activity of a farmer is income which preconditions the standard of living of a farming family, and constitutes an important economic factor of a farm's efficiency. The data resources of the CSO do not include information on the absolute income level, but they provide information on the prevailing livelihood source of a farming family, which facilitates classification of households including specification of farmers' households i.e. those where agricultural activity ensures the prevailing income – source of the family's livelihood. The share of farmers' households was bigger in case of organic farms than in studied farms' population (Chart 3). As far as in farms' population, the farmers' households constituted a stable fraction in the researched period (27-28%), in the group of organic farms they noted a significant decrease (from 52% to 46%). In the group of organic farms, contrary to farms' population, a relatively smaller group generated income outside agriculture, but in the recent years the share of organic farms with non-agricultural income increased. It may be stated that in case of organic farms the agricultural activity slowly begins to lose its importance as the predominant source of household's budget. There occurs a gradual diversification of income of farming families which run a farm in line with the principles of organic farming. Thus the organic farms are increasingly similar to the average individual

farms in terms of income structure (this is evidenced e.g. by the growing value of ISS which in 2005 amounted to 0.55, while in 2010 – 0.63).

The quality of farming is dependent not only on natural and climate conditions, but also – to an increasing extent – the skills and knowledge of farm managers. Professional school education becomes simply indispensable for organic farming, which undoubtedly requires more knowledge and skills than traditional farming – even the highly specialised one, where knowledge is transferred to agriculture along with industrial means of production. The data referring to the researched groups of farms, shown on Chart 4, seem to confirm the above. Persons managing organic farms more often had vocational preparation to the profession of a farmer, which is evidenced by the higher share of managers with agricultural education. But, at present, nearly the half of persons managing organic farms does not have vocational preparation to the profession of a farmer. It may be assumed that they perceive this activity only as one of their “businesses”.



Source: Prepared on the basis of the Central Statistical Office's data of the Agricultural Census 2010
 Figure 3. Income structure of all and organic farms, as well as the share of farms with non-agricultural income



Source: Prepared on the basis of the Central Statistical Office's data of the Agricultural Census 2010
 Figure 4. The structure of all and organic farms' managers by their education

CONCLUSIONS

1. In 2005-2010, the number of organic farms increased significantly – in particular because of financial incentives and environmental standards imposed on farms, and to a smaller extent due to demand and price factors.
2. The analysis of structures with the use of the relative index of structure similarity showed considerable differences between organic farms and overall individual farms. The structural changes in the former group are greater, which results primarily from the significant provision of the group of organic farms with farms representing more favourable features, such as: farms' area, agricultural income, farmers' education.
3. The increasing orientation of organic farms towards plant production only, and limitation of the livestock head age contradict the idea of organic production, in line with which these farms should be bi-oriented (plant and animal production) with broad structure of agricultural crops ensuring a closed circuit of organic matter and fertilisers within a farm.
4. Organic farms are characterised by income structure predominated by income from the farm, as well as income from non-agricultural activity.
5. Organic farms exhibit a significant advantage as compared to the farms in total as regards the human factor: there are more users with post-secondary and especially higher education – both general and agricultural.

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