

# CHARACTERISTICS OF ORGANIC LIVESTOCK FARMS IN POLAND IN 2009–2011\*

Ewa Sosnówka-Czajka1+, Iwona Skomorucha1, Renata Muchacka2

<sup>1</sup>Department of Technology, Ecology and Economics of Animal Production, National Research Institute of Animal Production, 32-083 Balice n. Kraków, Poland <sup>2</sup>Institute of Biology, Department of Animal Physiology and Toxicology, Pedagogical University of Cracow, Podchorążych 2, 30-084 Kraków, Poland \*Corresponding author: ewa.sosnowka@izoo.krakow.pl

#### Abstract

This study was designed to provide a thorough characterization of individual organic farms with certified animal production in Poland in the years 2009–2011. The study consisted of a direct survey using a standard questionnaire. Monitoring of organic farms showed that organic animal production in Poland is still developing. The most common type is backyard subsistence farming for own consumption and possibly for direct sales at local markets. Organic farms with an area exceeding 20 ha tend to orient themselves towards specialized production of cattle, sheep or pigs, while medium-sized organic farms specialize in pork and organic lamb production. However, the observed specialization in livestock production on organic farms is still relatively small.

Key words: organic farming, poultry, cattle, sheep, pigs

Over the last years, there has been a growing interest in organic farming, also known as organic agriculture. The sustainable farming principles promoted by the European Union (EU) certainly apply to organic production because organic farms minimize environmental degradation, by design keep native breeds (thus contributing to preservation of species biodiversity), ensure that animals enjoy high welfare standards, limit overproduction of agricultural products, and produce "safe" foods of high nutritional quality (Lund and Röcklinsberg, 2001; Hovi et al., 2003; Vaarst et al., 2004; Tuyttens et al., 2008).

The occasional problems in large-scale commercial livestock production associated with the incidence of foot-and-mouth disease (FMD), BSE or avian influenza

<sup>\*</sup>Work performed as part of the multiyear programme: project 7022.9 entitled "Development and verification of animal husbandry technology under organic farming conditions".

cause panic among consumers and lead them to look for alternative sources of food of better quality, thereby contributing to increased demand for organic foods. Organic farming, which offers an alternative to conventional agriculture, is a production system designed to protect natural ecosystems (Stockdale et al., 2001) and improve the quality of agricultural products.

As a sustainable system, organic farming not only protects the environment but can also contribute to environmental improvement by reducing the degree of environmental degradation generated by intensive agricultural practices (Pacini et al., 2003; Bengtsson et al., 2005; Flohre et al., 2011).

Poland's accession to the European Union and provision of financial support instruments to certifiable organic farms have considerably improved their financial situation and contributed to a gradual increase in their number. According to Kociszewski (2010 b), EU subsidies were a major factor in stimulating the rapid increase in the number of organic farms in Poland in the first decade of the 21st century. In Poland, organic farms were eligible for subsidies as part of the Agri-Environmental Programme for 2007–2013. In addition, where organic farms keep animals enrolled in the genetic resources conservation programme, farmers were eligible for financial support as part of several agri-environmental packages (Nos. 1, 3 and 7) (Agri-Environmental Programme...).

Initially, EU subsidies for organic agriculture were designed in such a way that most of them went to very large organic farms (Wilkin, 2000). Subsequent organic farm support schemes were designed to support this type of production in small and medium farms, where the amount of subsidy depended on cultivated area; thus, under the Rural Development Programme 2007–2013, farms ranging in size from 1 to 100 ha received 100% subsidy, farms of 100.01 to 200 ha received 50% subsidy, and those exceeding 200 ha received a subsidy of only 10% (Kociszewski, 2010 b).

According to Kociszewski (2013), Polish agriculture has all qualities to become a major producer and exporter of organic food; however, the agricultural policy does not favour development of that sector of agricultural production in our country. Moreover, an important barrier in the development of the Polish market for organic food is the scattering of farms located nationwide, which hinders the creation of distribution system that would ensure effective flow of goods between the producers and the trade. Distribution of organic food is dominated by direct sales and specialised shops (approximately 80% of the overall market), which is typical for countries with low development of the market for such products (Łuczka-Bakuła and Smoluk--Sikorska, 2010).

Poland's membership of the European Union, which ensures a more stable legal framework and new marketing areas, made the farmers much more interested in conversion to organic farming.

The aim of this study was to provide a thorough characterization of individual organic farms with certified animal production in Poland in the years 2009–2011. The farms under study were mainly analysed for the species and number of organically raised livestock, taking into account the size of the studied farms.

## Material and methods

The multiannual programme "Biological, environmental and technological factors affecting the development of animal production" was carried out at the National Research Institute of Animal Production in the years 2006–2011. One of its components was to conduct a monitoring of Polish organic farms during 2009–2011. Part of the monitoring data was used to prepare the present publication. In this connection, a list of all Polish agricultural producers holding a certificate of conformity with organic production standards and those converting from conventional to organic production all over Poland was obtained in 2009, 2010 and 2011 from the Main Inspectorate of Agricultural and Food Quality Inspection (GIJHARS).

Based on the list obtained from the GIJHARS, 4207 certified organic livestock farms were asked to participate in a questionnaire survey. However, only 663 organic farms agreed to take part, which constitutes 15.76% of all organic certified livestock farms in Poland.

A survey was developed for organic farms, containing questions regarding farm size, structure of livestock population (breeds, lines and varieties), housing systems, hygiene, health, production results, manure management, and the market place for products made. During the years 2009–2011, individual organic farms were analysed all over Poland. This evaluation included only organic livestock farms, in keeping with the data provided by the GIJHARS. The study was conducted through a direct survey using a standard questionnaire containing open and closed questions. Some of the questionnaires were completed in the presence of the interviewer as a directed interview, mainly in southern and central Poland. In the other parts of Poland, the questionnaires were filled in by the farmers.

The results of the research were presented by tabular summary and graphic methods (Runowski, 2009).

## Results

Table 1 presents the number of organic livestock farms participating in the questionnaire survey in different voivodeships and gives the percentage of analysed organic farms in a given voivodeship. Because the percentage of surveyed farms was calculated in relation to the total number of organic livestock, plant or mixed farms in a given voivodeship, the percentage of surveyed farms varies so much in different voivodeships. The highest proportion of organic farms participating in the questionnaire survey was in the Dolnośląskie (48%) and Opolskie (41%) Voivodeships, and the lowest in the Świętokrzyskie and Lubuskie Voivodeships (17% each).

Medium-sized farms with an area of 5-20 ha accounted for as much as 58.67% of all the organic livestock farms surveyed. Farms over 20 ha constituted around 27% of all the farms surveyed. Small farms with an area under 5 ha formed the smallest group of only 14.18% (Table 2).

e	5	1
Voivodeship	Number of farms surveyed	% of farms surveyed in relation to total number of organic farms in a voivodeship
Dolnośląskie	238	48.4
Kujawsko-Pomorskie	11	34.2
Lubelskie	462	24.3
Lubuskie	80	16.6
Łódzkie	77	23.8
Małopolskie	586	23.3
Mazowieckie	592	32.3
Opolskie	30	41.1
Podkarpackie	426	20.0
Podlaskie	470	39.1
Pomorskie	128	31.1
Śląskie	76	39.4
Świętokrzyskie	259	16.5
Warmińsko-Mazurskie	446	39.3
Wielkopolskie	89	17.6
Zachodniopomorskie	237	18.6
Total	4 207	24.6

Table 1	Number o	of organic farm	s surveyed in	different	voivodeshing	s of Poland in 2009
Table 1.	INUITIDEI O	n organic farm	s suiveveu m	unnerent	vorvouesinps	5 01 F 01anu in 2009

\*Source: authors' own study and authors' own elaboration based on GIJHARS specification.

Table 2. Size structure of the monitored organic farms					
Item		Area of farm (ha)			
	<5 ha	5–20 ha	>20 ha	- Total	
Number of farms	94	389	180	663	
Proportion of farms (%)	14.2	58.7	27.1	100	

Table 2. Size structure of the monitored organic farms

\*Source: authors' own study.

The largest number of small organic livestock farms was located in the Małopolskie and Podkarpackie Voivodeships (approx. 62% in total), but as much as 39% of medium-sized farms were also situated in the same two provinces. A large number of medium-sized farms (approx. 27%) was also found in the Podlaskie Voivodeship. Around 38% of large organic farms were located in the Podlaskie and Warmińsko-Mazurskie Voivodeships (Table 3).

As part of the monitoring of organic farms in 2009–2011, a total of 43 873 animals raised on these farms were evaluated. Large and medium-sized farms raised around 88% of animals in total. The average number of animals raised in small and medium-sized farms was similar and twice as small as in large farms (Table 4).

Poultry was raised by as much as 91% of small farms, approx. 85% of medium-sized farms and 57% of large organic farms. The dominant species were chickens (50–85% of the poultry population, depending on organic farm size), followed far behind by ducks (just 9–18% of the poultry population, depending on organic farm size). Cattle were the second most numerous species in the organic farms. Most farms raising pigs and cattle were found among 5–20 ha farms, with 8% fewer large farms raising pigs and cattle compared to medium-sized farms (Table 5).

Voivodeship	Percentage of farms with an area (%)			
	<5 ha	5–20 ha	>20 ha	
Dolnośląskie	3.2	1.7	6.6	
Kujawsko-Pomorskie	2.1	2.7	6.0	
Lubelskie	4.3	3.5	4.4	
Lubuskie	3.2	1.2	3.8	
Łódzkie	1.1	1.2	4.4	
Małopolskie	43.3	20.8	5.5	
Mazowieckie	3.2	4.2	3.8	
Opolskie	1.1	1.1	1.1	
Podkarpackie	18.9	17.8	4.9	
Podlaskie	3.2	26.9	20.7	
Pomorskie	1.1	3.8	7.1	
Śląskie	3.2	1.2	-	
Świętokrzyskie	5.6	7.1	1.6	
Warmińsko-Mazurskie	1.1	4.2	17.5	
Wielkopolskie	4.3	1.1	5.5	
Zachodniopomorskie	1.1	1.5	7.1	
Total	100	100	100	

Table 3. Size structure of the monitored organic farms in different voivodeships

\*Source: authors' own study.

Té auto	Area of farm (ha)				
Item	<5 ha	5–20 ha	>20 ha		
Population of animals in the farms surveyed			·		
in physical heads	5 327	20 259	18 287		
in LU*	261.5	3 852.5	5 346.0		
Proportion of animals in the farms (%)					
in terms of physical units	12.1	46.2	41.7		
in LU*	2.8	40.7	56.5		
Average number of animals kept per farm					
in physical heads	56.7	52.1	101.6		
in LU*	2.8	11.3	29.7		

Table 4. Population of animals in the monitored organic farms

\*LU (Livestock Unit) – in Polish DJP, based on the Journal of Laws no. 213 item 1397, Regulation of the Council of Ministers of 9 November 2010 on types of projects likely to have significant effects on the environment.

\*\*Source: authors' own study.

Species		Area of farm (ha)			
	<5 ha	5–20 ha	>20 ha		
Poultry, including:	91.2	85.6	57.2		
hens	84.7	79.5	52.9		
ducks	15.6	17.9	9.0		
geese	7.8	5.0	6.8		
turkeys	7.8	5.9	4.0		
guinea fowl	4.4	5.6	5.1		
Pigs	14.4	29.6	22.0		
Cattle	56.7	76.0	68.4		
Horses	11.1	20.4	35.6		
Sheep	2.2	12.0	13.0		
Goats	13.3	4.4	9.6		
Fallow deer	0	0.3	1.1		

Table 5. Proportion of farms keeping different species of animals (%)

\*Source: authors' own study.

	Size of farm (ha)					
Species	<5 ha		5–20 ha		>20 ha	
	physical heads	LU*	physical heads	LU*	physical heads	LU*
Hens	53.12	0.21	33.03	0.13	54.27	0.22
Ducks	27.55	0.11	27.88	0.11	16.10	0.06
Geese	6.97	0.06	11.41	0.09	40.07	0.32
Turkeys	11.90	0.29	11.93	0.29	14.49	0.35
Guinea fowl	8.15	0.02	8.22	0.03	8.86	0.03
Pigs	7.91	2.77	26.77	9.37	42.14	14.75
Cattle	3.24	3.24	7.48	7.48	27.19	27.19
Horses	1.44	1.73	3.39	4.07	9.01	10.81
Sheep	11.02	1.10	34.52	3.45	218.29	21.83
Goats	6.07	0.91	8.65	1.30	18.34	2.75

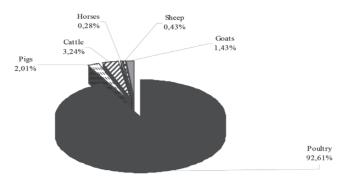
Table 6. Average size of animal herd kept in the monitored organic farms

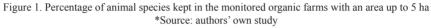
\*LU (Livestock Unit) – in Polish DJP, based on the Journal of Laws no. 213 item 1397, Regulation of the Council of Ministers of 9 November 2010 on types of projects likely to have significant effects on the environment.

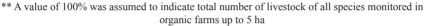
\*\*Source: authors' own study.

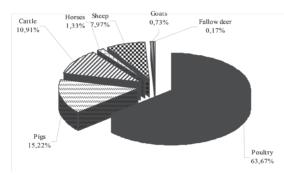
Table 6 shows the average size of a herd of animals kept in the monitored organic farms. Poultry was generally kept in relatively small flocks of up to 54 birds. Large farms with an area over 20 ha kept certified farm animals in the largest herds (over 200 sheep, around 40 pigs, and 27 head of cattle).

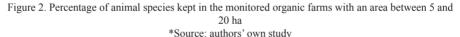
Figures 1–3 present percentages of animal species raised in small, medium-sized and large organic farms. The most numerous animals kept on organic farms were poultry, which constituted approx. 93% of all livestock raised on small farms and 33% of the animal population in large farms. Cattle were the second most numerous species in small farms, pigs in medium-sized farms, and sheep in large farms.











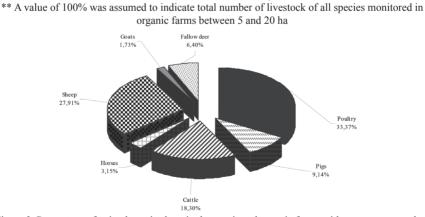


Figure 3. Percentage of animal species kept in the monitored organic farms with an area greater than 20 ha

\*Source: authors' own study

\*\* A value of 100% was assumed to indicate total number of livestock of all species monitored in organic farms greater than 20 ha

## Discussion

Many agricultural producers owning certified farms refused to take part in the survey, which is why during 2009–2011 questionnaires were obtained from only 663 organic livestock farms in Poland. Although the farmers were guaranteed that their personal data would be protected and the information obtained would remain secret, many of them feared that possibly unfavourable monitoring results would adversely affect the assessment of their farms, hence their refusal to participate in the questionnaire survey. Most often this type of decision was made by elderly people and those with primary education. Likewise, Pawlewicz et al. (2010), who conducted research on organic farming in Poland in 2009, surveyed all organic farm owners from the Ostróda and Olsztyn districts in the Warmińsko-Mazurskie Voivodeship and obtained data from 51% of the study population. The authors attributed such a low result to mistrust and unwillingness on the part of farmers to answer questions related to production profitability. The fact that the questionnaire was fairly detailed was another probable reason.

The data presented in the current study suggest that organic production in Poland shows large spatial and regional variation. Production is mostly concentrated in northern and southern regions of Poland. Also other authors showed the interest in organic farming in Poland to vary according to region, as evidenced by the number of farms, their size, and cropland area (Kuś and Jończyk, 2013; Jończyk, 2014).

In the present study most of the monitored farms (58.67%) were medium-sized (5 to 20 ha) and small farms (less than 5 ha) formed the smallest group (14.18%). This is also confirmed by the analyses of Matysik-Pejas (2008), who reported that in 2006 there were 26.49% of small farms (less than 5 ha), 46.95% of medium-sized farms (5 to 20 ha), and 26.56% of large farms (larger than 20 ha). However, the agrarian structure of Polish farms is very fragmented. In 2010, the average area of a Polish agricultural holding was just 9.13 ha, with as much as 56.1% of farms with an area less than 5 ha (Łączyński and Ziółkowska, 2013), as compared to 23-28% in Germany and France (Ziętara, 2008). Therefore, the present or own monitoring results, which show that over 85% of the organic livestock farms surveyed are larger than 5 ha are very positive and attest to the high potential of Polish organic farmers, who can supply organic products not only to local markets, but also to the domestic and foreign markets. As shown by Pawlewicz (2007), the average size of organic farm exceeded 27 ha in 2004 but gradually declined since 2005, reaching 20.8 ha in 2007. However, according to Kuś and Jończyk (2009), the average size of an organic farm in Poland in 2007 exceeded 24 ha of agricultural land and was three times as large as the average size of all farms in Poland. The average organic farm size in Poland was 25.8 ha in 2011 (Jończyk, 2014), and 25.5 ha in 2012, being three times as large as the average size of all Polish farms (Kuś and Jończyk, 2013). According to Kociszewski (2010 b), the increase in the number of small organic farms is highly beneficial for Polish agriculture because it can help reduce the unemployment rate, improve living standards, and relate the rural population to the source of income (i.e. land) and to the production of high quality food. Moreover, gradual increase of the share of small organic farms is extremely important for the environmental protection, where small farms create much less burden on the environment compared to large, even organic farms. Furthermore, Polish agriculture is mostly based on small farms, so an increase in the share of such farms in organic production may be a significant stimulus for growth of green farming in Poland (Kociszewski, 2013).

In Poland's northern voivodeships (Kujawsko-Pomorskie, Pomorskie, Podlaskie, Warmińsko-Mazurskie and Zachodniopomorskie) and in the Dolnośląskie Voivodeship, over 50% of the monitored farms were larger than 20 ha. Considering the growth in the number of organic farms in recent years in these voivodeships, it can be assumed that these regions have the highest potential for development of organic farming in Poland in the coming years. However, the changes in organic farming subsidies, which will become effective from 2014, will show if the past increase in the number of certified organic farms resulted only from the payment scheme or from the long-term development of this sector of agriculture supported not only by the subsidies.

Most animals were kept in medium-sized farms (5 to 20 ha), i.e. approx. 34% more than in small farms and 4.5% more than in large farms. However, when comparing the average number of animals kept per farm, the average population of animals in a large organic farm was found to be almost 100% that of small and medium-sized farms, which shows that farms with an area over 20 ha specialize in commercial livestock production. Regardless of farm size the dominant species in organic farms was poultry, the proportion of which decreased considerably with decreasing farm size. The second most common species raised in large and small organic farms was cattle, the proportion of which increased with increasing farm size. It is worth noting that the proportion of horses and sheep as well as fallow deer increased with increasing farm area. The population of goats also increased with increasing organic farm size, but its percentage remained more or less the same in all three categories of the monitored farms. Different findings were reported by Komorowska (2007) who observed that in 2005 small and medium-sized farms had more farm animals raised using grasslands (cattle, sheep, goats and horses), while large farms maintained more pigs.

According to Constantin (2012), over the years 2006–2010 in Romania the population of organic animals showed a drastic decline except for laying hens, the number of which increased by as much as 400% during that period. Compared to 2006, in 2010 in Romania the population of certified animals decreased considerably (cattle by approx. 52.8%, dairy cows by approx. 71.7%, pigs by 80.6% and sheep by 78.2%). In 2010 in that country, organic certification covered 5358 head of cattle, 2332 dairy cows, 18883 sheep and only 320 pigs, as compared to 21580 laying hens.

According to Kuś and Jończyk (2013) and Jończyk (2014), livestock numbers on organic farms are much lower than in Polish agriculture as a whole, although certified farms have a large area of grasslands and a high share of forage plants in total crop area. The same authors also observed that livestock numbers are related to the size of organic farms, with 2–3 times as many animals in small farms as in large farms. It follows that large farms are geared towards receiving immediate financial benefits from the subsidies and not from running an organic farm. In contrast, small farms are oriented towards running an efficient organic farm, which provides them with

additional financial benefits other than the subsidies. Also according to Runowski (2009), for a part of newly registered organic farms, the main premise to begin such production were significant subsidies obtained for organic crop areas.

When analysing different types of organic agricultural production in nine randomly chosen Polish voivodeships, Kociszewski (2010 a) found that in 2008 poultry was kept by 15.8% of organic farms compared to as much as 19.5% in 2009. However, our study revealed a much higher percentage of farms with organic poultry. The number of organic poultry farms is evidence that these birds were mostly kept for subsistence purposes with surplus animals sold at local markets. Importantly, poultry was kept in many of these farms for hobby purposes, especially in those in which agritourism provided an additional source of income.

Another species commonly kept on the organic farms were cattle. Over half of the small organic farms maintained cows. However, the largest proportion of cattle-raising farms was found in the group of medium-sized organic farms (5–20 ha). According to Kociszewski (2010 a), however, only 34.7% of organic farms raised cattle in 2008 and this proportion decreased by 3.9% in 2009.

According to Kociszewski (2010 a), the proportion of organic farms stocking sheep increased from 13.8% in 2008 to 15.1% in 2009. In our study similar results, namely the proportion of farms raising sheep, were only obtained for small organic farms, while much higher figures (22–30%) were noted for the other farms under analysis.

The largest proportion of farms with organically raised sheep and horses was found among large farms. The present results indicate that most organic farms have diversified production, which is required by the organic management system. Slightly different results for organic agriculture in Poland were obtained by Komorowska (2007), who showed that almost 60% of organic farms raised cattle and chickens. Pigs were raised by 35% of the farms, horses by almost 20%, and sheep and goats by approx. 10%.

Our data concerning the size of herds and flocks of different animal species raised in organic farms provide evidence that poultry in Poland was kept mainly in small, most often mixed flocks. The largest group was formed by chickens, with a flock of chickens averaging 33–54 birds regardless of the size of organic farm. With flocks of this size, it is difficult to speak about commercial production of organic eggs and organic live poultry for the domestic market, to say nothing of the foreign market. During the monitoring period (2009–2011), organic poultry were raised by Polish farmers mainly as a supplementary source of income. By way of comparison, approx. 2% of the eggs produced in Denmark in 2009 came from organic systems (Dekker et al., 2011). However, backyard farming of organic poultry predominated during the analysed period in Poland. The maintenance of small, mixed flocks of poultry in organic farms also had a marketing dimension, improved the image of organic farms and made them more attractive as agritourism farms. Many certified organic farms also offered agritourism services as another form (other than subsidies) of increasing farm profitability.

From an economic point of view, horse breeding is the same type of livestock production as pig or poultry breeding. In Europe horse meat is in very high demand. But many farmers in Europe keep horses practically for life. The monitoring of organic farms showed that small farms kept an average of one horse, which was most often used for traction in small fragmented farms located in mountainous areas (entire belt of southern Poland), and also where farmland was divided into several scattered and small plots, which occurs relatively frequently in the case of small farms in Poland. In addition, horses are very often kept for sentimental reasons. In large farms, horse herds were mainly used as recreational and sport horses, as an additional economic activity, or recreationally as part of agritourism services.

In our study, herds of cows in small and medium-sized organic farms did not exceed 7 animals on average. It should be remembered, however, that Polish agriculture underwent many changes during the analysed period. In 2004–2009, the number of all dairy farms in Poland fell by 30%, and an average milk producer had just 6 dairy cows in 2004 compared to 10 in 2009 (Czyżewski and Śmigla, 2012). In a study on the economics of organic dairy cattle production in Poland in 2007, Komorowska (2009) found that in farms with an average area of 15.28 ha of agricultural land, the annual average number of dairy cows was 5.8, which ensured the profitability of organic milk production. However, in our study herd size in large organic farms was around 27 cows. Malaga-Toboła (2011) reports that already a dairy herd of 11–20 cows makes production of organic milk in Poland profitable, while organic herds of more than 20 cows enable reaching a profitability index of almost 140%.

It is necessary to stress, however, that compared to leading milk producing countries in the European Union, the structure of Polish production continues to be very fragmented (Czyżewski and Śmigla, 2012).

In our study, we found the average pig herd size to increase with the size of an organic farm. In a study concerning the economics of organic pig production in Poland in 2007, Komorowska (2009) observed that in farms with an average area of 16.29 ha of agricultural land, the annual average number of sows was 5.0. The same author also demonstrated that sow management and organic piglet production were economically inefficient, whereas live pig production under the organic system generated a positive, but small, economic gain.

Rokicki (2007), who analysed all sheep farms in a selected voivodeship of Poland in 2004, concluded that as much as 70% of farms on average keep flocks of 80 to 170 ewes. The monitoring of organic farms, carried out as part of our study in 2009–2011 showed that the average flock size was up to 200 sheep in farms larger than 20 ha. Compared to the national average of 21 sheep in 2010 (Łączyński, 2011), this shows that sheep farming was developed rather well in large organic farms.

The findings from this study led to the following conclusions:

1. Animal production in organic farms is run on a small scale.

2. In the organic farms surveyed, universal production prevails.

3. In farms above 20 hectares, a trend exists to create specialised organic units oriented on the production of cattle, sheep and pigs.

4. In the category of medium-sized organic farms with the area from 5 to 20 ha with livestock, farms specialising in the production of eco-friendly pork and lamb are found.

5. In small organic farms, the livestock production is run mainly to satisfy the farm's own needs with very little left for sale.

6. Large farms running livestock production have relatively small population of livestock compared to small and medium farms. This may indicate that they seek profits from subsidies to organic farming.

In summary, the monitoring of organic farms conducted in 2009-2011 showed that organic livestock production is still developing and is carried out on a relatively small scale. The most common type is backyard subsistence farming for own consumption and possibly for direct sales at local markets. Organic farms with an area exceeding 20 ha tend to orient themselves towards specialized production of cattle, sheep or pigs, while medium-sized organic farms specialize in pork and organic lamb production. However, the observed specialization in livestock production on organic farms is still relatively small. This fact is confirmed by poorly developed processing of organic animal production in Poland, and a very high diversification of livestock production paralleled by the management of relatively small herds of animals representing different species. In southern Poland, a considerable fragmentation of organic farms, which by design have to be closely related to farm area, is not conducive to development and specialisation in organic livestock production on a large scale. On the other hand northern Poland and part of central Poland, where organic farms are large and medium-sized, have a high potential for development of organic livestock production oriented towards export and the domestic market. It must be borne in mind, however, that in Poland the demand for organic products continues to be small and does not contribute to the development of organic farming, which to date has been mainly driven by the subsidies and the increasing exports to the EU.

The organic farming support schemes that have been used to date contributed to a sharp increase in the number of organic farms, but failed to stimulate the production of organic foods. Polish agriculture has a high potential to become a major producer of organic food. However, one of the main impediments to the development of organic farming is the fact that the food industry lacks organic food processing plants and distribution system. The fact that there is no promotion of organic foods in Poland and they are expensive considering the low income of the Polish population are other reasons why the internal market for organic food products is small.

The proposed system of subsidies in Rural Development Programme 2014–2020 will not stimulate production of organic food; moreover, the restrictions planned to the subsidies for organic farming will probably contribute to the reduction of the number of farms during the transition period. This will, in particular, apply to large farms seeking immediate profits derived from subsidies acquired for permanent grassland.

Because the lack of coherent policy for organic farming is not conducive to the development of this type of agricultural production, it is expected that lower subsidies, which so far stimulated organic production, will reduce the number of organic farms.

### References

- Agri-Environmental Programme (Agri-environment Payments). Axis 2 Improving the environment and rural development. Ministry of Agriculture and Rural Development, Warszawa. http://www.minrol.gov.pl/pol/Wsparcie-rolnictwa-i-rybolowstwa/PROW-2007-2013/Dzialania-PROW-2007-2013/ Os-2-Poprawa-srodowiska-naturalnego-i-obszarow-wiejskich/Program-rolnosrodowiskowy-Platnosci-rolnosrodowiskowe, Access: 13.10.2013.
- B e n g t s s o n J., A h n s t r o m J., W e i b u l l A.C. (2005). The effects of organic agriculture on biodiversity and abundance: a meta-analysis. J. Appl. Ecol., 42: 261–269.
- Borell von E., Sbrensen J.T. (2004). Organic livestock production in Europe: aims, rules and trends with special emphasis on animal health and welfare. Livest. Prod. Sci., 90: 3–9.
- C o n s t a n t i n F. (2012). Economic performance of organic farming in Romania and European Union. Economia Seria Management, 15: 108–119.
- C z y ż e w s k i B., Ś m i g l a M. (2012). Institutional conditions for development of dairy farms in Poland (in Polish). J. Agribus. Rural Dev., 3: 81–99.
- Dekker S.E.M., de Boer I.J.M., Vermeij I., Aarnink A.J.A., Groot Koerkamp P.W.G. (2011). Ecological and economic evaluation of Dutch egg production systems. Livest. Sci., 139: 109–121.
- Flohre A., Rudnick M., Traser G., Tscharntke T., Eggers T. (2011). Does soil biota benefit from organic farming in complex vs. simple landscapes? Agricul. Ecosys. Environ., 141: 210-214.
- Hovi M., Sundrum A., Thamsborg S.M. (2003). Animal health and welfare in organic livestock production in Europe: current state and future challenges. Livest. Prod. Sci., 80: 41–53.
- J o ń c z y k K. (2014). Development of organic farming in Poland (in Polish). Zesz. Nauk. WSEI seria: Ekonomia, 8: 129–140.
- K o c i s z e w s k i K. (2010 a). Supply-side conditions of organic farming functioning in the light of surveys (in Polish). Zesz. Nauk. SGGW Problemy Rolnictwa Światowego, 10: 79–90.
- K o c i s z e w s k i K. (2010 b). The development of organic farming in Poland under the conditions of integration with the European Union. Economic and Environmental Studies, 10: 11–22.
- K o c i s z e w s k i K. (2013). Greening of the Polish agriculture vs. its sustainable development in terms of the EU membership (in Polish). Monografie i Opracowania, 227.
- Komorowska D. (2007). Ecological farms in Poland in the light of data released by the Central Statistical Office GUS (in Polish). Zesz. Nauk. SGGW Problemy Rolnictwa Światowego, 2: 352–359.
- K o m o r o w s k a D. (2009). The economics of ecological production in Poland (in Polish). Zesz. Nauk. SGGW – Ekon. i Org. Gosp. Żywn., 73: 143–153.
- K u ś J., J o ń c z y k K. (2009). Development of organic farming in Poland (in Polish). J. Res. Appl. Agricul. Eng., 54: 178–182.
- K u ś J., J o ń c z y k K. (2013). Development of organic farming in the last 20 years in Poland and EU (in Polish). J. Res. Appl. Agricul. Eng., 58: 38–43.
- L u n d V., R ö c k l i n s b e r g H. (2001). Outlining a conception of animal welfare for organic farming systems. J. Agricul. Environ. Ethics, 14: 391–424.
- Łączyński A. (2011). Livestock and selected elements of animal production methods (in Polish). National Agricultural Census 2010. Central Statistical Office. Supervised by Łączyński. Warszawa 2011.
- Łączyński A., Ziółkowska E. (2013). Statistical yearbook of agriculture 2012 (in Polish). Branch Yearbooks. Central Statistical Office. Compiled by Agriculture Analyses and Studies Section Agriculture Department supervised by Łączyński and Ziółkowska. Warszawa 2013.
- Łuczka-Bakuła W., Smoluk-Sikorska J. (2010). The organic fruit and vegetables price level and the development of organic food market (in Polish). J. Res. Appl. Agric. Eng., 55: 12–14.
- M a l a g a To b o ł a U. (2011). Influence of the milking cows herd size and technical infrastructure on the production efficiency on ecological farms (in Polish). Inż. Rol., 8: 207–214.
- M a t y s i k P e j a s R. (2008). Development processes of the organic farming in Poland in years 2003-2007 (in Polish). Zesz. Nauk. SGGW – Problemy Rolnictwa Światowego, 4: 309–318.
- Pacini C., Wossink A., Giesen G., Vazzana C., Huirne R. (2003). Evaluation of sustain-

ability of organic, integrated and conventional farming systems: a farm and field-scale analysis. Agricul. Ecosys. Environ., 95: 273–288.

- P a w l e w i c z A. (2007). Ecological agriculture in Poland selected indicators (in Polish). Zesz. Nauk. SGGW Problemy Rolniczego Świata, 2: 415–422.
- Pawlewicz A., Kaczmarczyk T., Oczyńska S. (2010). Chances and the barriers of functioning of ecological agriculture in opinion of owners of ecological farms (in Polish). Zesz. Nauk. SGGW – Ekon. i Org. Gosp. Żywn., 85: 81–85.
- R o k i c k i T. (2007). Influence of the agricultural land structure on economic results of sheep breeding farms (in Polish). Rocz. Nauk Rol. Seria G, 94: 46–50.
- R u n o w s k i H. (2009). Organic farming. Progress or regress? (in Polish). Rocz. Nauk Rol., Seria G, 96: 182–193.
- Stockdale E.A., Lampkin N.H., Hovi M., Keatinge R., Lennartsson E.K.M., Macdonald D.W., Padel S., Tattersall F.H., Wolfe M.S., Watson C.A. (2001). Agronomic and environmental implications of organic farming systems. Adv. Agron., 70: 261–262, IN1, 263–327
- Tuyttens F., Heyndrickx M., De Boeck M., Moreels A., Van Nuffel A., Van Poucke E., Van Coillie E., Van Dongen S., Lens L. (2008). Broiler chicken health, welfare and fluctuating asymmetry in organic versus conventional production systems. Livest. Sci., 113: 123-132.
- Vaarst M., Roderick S., Lund V., Lockeretz W., Hovi M. (2004). Organic principles and values: the framework for organic animal husbandry. In: Animal Health and Welfare in Organic Agriculture, Vaarst M., Roderick S., Lund V., Lockeretz W. (eds). CABI Publishing, Wallingford, UK, pp. 1–12.
- Wilkin J. (2000). Countryside society state: new basis for social discourse about the rural matters in Poland (in Polish). In: Wilkin J. (ed.). Modelling of social and economic development of rural areas of Poland in terms of the accession to the European Union. Warsaw: The Polish Academy of Sciences, Institute of Rural and Agricultural Development.
- Ziętara W. (2008). Internal conditions of development of Polish agriculture (in Polish). Rocz. Nauk Rol., Seria G, 94: 80–94.

Received: 29 XI 2013 Accepted: 12 IX 2014