

ORIGINAL PAPER

Received: 30.03.2020

Accepted: 15.06.2020

## CHARACTERIZATION OF TABLE EGGS-PRODUCING ORGANIC FARMS IN MAZOWIECKIE VOIVODESHIP

Elżbieta Bombik , Anna Korzeniewska, Gabriel Maliszewski 

Institute of Animal Science and Fisheries, Siedlce University of Natural Sciences and Humanities, Bolesława Prusa 14, 08-110 Siedlce, Poland

### ABSTRACT

Increasing societal wealth, consumer awareness, demand for safe, healthy food, has resulted in an increased interest in organic food products. As a result, some farm owners may decide to convert to organic production. This paper aims to analyse data characterizing organic farms in the business of organic table egg production in the area of Mazowieckie Voivodeship, Poland, and the adjustments that had to be made to obtain a certificate. For that purpose surveys were handed out to organic farm owners in the Mazowieckie Voivodeship and 9 organic farms were selected for characterization. The first questionnaire contained 45 questions regarding general characteristics of the respondent – the farm owner, the adaptations made to obtain an organic production certificate, distribution and advertisement of products. The second questionnaire contained 10 questions focusing only on poultry production. Surveyed farms were mostly run by men with age above 40 years old, with secondary education. Each surveyed farm practiced mixed organic production, producing organic table eggs along with crops, dairy and meat production. Most common farm animals, kept along with poultry, was cattle, with some farms keeping pigs, goats or rabbits. The most popular poultry breed was Green-legged Partridge chickens. In most cases, the respondents choose poultry production due to the popularity amongst consumers, and ease of infrastructure adaptation. Respondents sold their organic products directly at the farm, where consumers could also purchase eggs, meat, vegetables and milk. Product advertisement relied heavily on direct consumer contact and referrals. Internet advertising was also gaining popularity.

**Key words:** organic farms, poultry, table eggs, organic production certificate

### INTRODUCTION

Increasing societal wealth, consumer awareness, demand for safe, healthy food, has resulted in an increased interest in organic food products [Obiedzińska et al. 2013]. Customers prioritize origins and contents over price or packaging [Kucińska et al. 2010a, Kucińska et al. 2010b]. Organic food is even recognized as beneficial to human health by members of the scientific community [Szołtysek and Dziuba 2006, Metera et al. 2010a, Metera et al. 2010b, Kuczyńska 2011].

According to the Polish Office of Competition and Consumer Protection (UOKiK), organic food must be produced without the use of genetically modified organisms (GMO), synthetic fertilizers and chemical pesticides, ionizing radiation, as well as most food additives, such as preservatives, pigments and sweeteners [UOKiK

2014]. This lack of food additives and other artificial compounds perceived by consumers as unnatural, contributes greatly to the rising popularity of organic foods. Lower content of harmful substances, potential health benefits and better organoleptic qualities are highly sought after [Hermaniuk 2018] – new organic food stores are opening, and most supermarkets and grocery store chains have a stand, or at least a shelf, dedicated to such products [UOKiK 2015]. Younger generations of consumers also perceive organic food products as environmentally responsible, and are less likely to suspect their producers and distributors of manipulation or unethical practices. [Escher and Petrykowska 2016].

The European Union regulates organic food production with the following directives:

- Regulation (EC) No. 178/2002 of the European Parliament and of the Council of 28 January 2002

✉ elzbieta.bombik@uph.edu.pl

laying down the general principles and requirements of food law, establishing the European Food Safety Authority and laying down procedures in matters of food safety;

- Council Regulation (EC) No. 834/2007 of 28 June 2007 on organic production and labelling of organic products and repealing Regulation (EEC) No 2092/91;
- Commission Regulation (EC) No. 889/2008 of 5 September 2008 laying down detailed rules for the implementation of Council Regulation (EC) No. 834/2007 on organic production and labelling of organic products with regard to organic production, labelling and control;
- Commission Regulation (EC) No. 1235/2008 of 8 December 2008 laying down detailed rules for implementation of Council Regulation (EC) No. 834/2007 as regards the arrangements for imports of organic products from third countries.

Organic food production in the Polish Republic is regulated by the following core legislative acts:

- Act of 25 June 2009 on organic farming. *Journal of Laws* 2009 No. 116, item 975 (Ustawa z dnia 25 czerwca 2009 r. o rolnictwie ekologicznym. *Dz.U.* 2009 nr 116 poz. 975);
- Act of 30 August 2002 on the conformity assessment system; *Journal of Laws* of 2010, No. 138, item 935, as amended (Ustawa z dnia 30 sierpnia 2002 r. o systemie oceny zgodności. *Dz.U.* 2010 nr 138 poz. 935 ze zmianami);
- Act of 5 December 2014 amending the Organic Agriculture Act. *Journal of Laws* of 2015, item 55 (Ustawa z dnia 5 grudnia 2014 r. o zmianie ustawy o rolnictwie ekologicznym. *Dz.U.* 2015 poz. 55).

This paper aims to analyse data characterizing organic farms in the business of organic table egg production in the area of Mazowieckie Voivodeship, Poland, and the adjustments that had to be made to obtain a certificate.

## MATERIAL AND METHODS

To obtain necessary data for the farm characteristics analysis, surveys were handed to 27 recipients, during the meeting of the east-mazovian branch of organic food producers association – Ekoland. 9 farms producing organic table eggs were chosen among respondents, based on the criteria of certification and location – selected farms were located in the following districts of Mazowieckie Voivodeship: Siedlecki, Łosicki, Sokołowski, Miński, Węgrowski. Each farm is certified for organic table egg production, some are also certified for organic meat production. The survey was carried out using two questionnaires prepared by the authors. The first questionnaire

contained 45 questions regarding general characteristics of the respondent – the farm owner, the adaptations made to obtain an organic production certificate, distribution and advertisement of products. The second questionnaire contained 10 questions focusing only on poultry production. Both questionnaires concerned conditions favorable to the development of organic production in the selected districts of Mazowieckie Voivodeship, such as: farm area, structure of land resources and crops, duration of organic production, farm owner's age, level of income, organic production conversion expenses and offered produce. Gathered data was analysed, presented graphically and summarised.

## RESULTS AND DISCUSSION

Farm no. 1 was located on the Hołowieński village, outskirts of the Sabnie municipality, Mazowieckie Voivodeship, away from urbanized areas and production plants. The farm had an area of 18.72 ha and was established in 2002 by a man under 30 years old. The respondent completed secondary education, specializing in agriculture. In addition, the respondent participated in state organized organic farming courses. The farm did not hire any additional employees. The production was mainly based on beef cattle and crops, along with minor flock of poultry and a pig herd. The farm actively promoted itself as well as its products.

Farm no. 2 was located on the outskirts of Nowa Wieś village in the Kosów Lacki municipality, Mazowieckie Voivodeship, 2 km from the landscape park. The farm, established in 2008, with an area of 41 ha was run by a woman, between 41 and 50 years old. The respondent completed secondary education, specializing in agriculture. In addition, the respondent participated in state organized organic farming courses. The farm hired one employee. The production was mainly based on organic crops, along with poultry, horse and goats. Most of the farm produce was sold on site, however, the owner gave away promotional brochures and advertised on the internet. Products were also showcased during local agricultural fairs.

Farm no. 3 was located 1.5 km away from Łukówiec village in the Mrozy municipality, Mazowieckie Voivodeship. The farm had an area of 7 ha and was run by a woman, between 41 and 50 years old, since the year 1999. The respondent completed secondary education, specializing in agriculture. The farm did not hire any additional employees. The farm kept cattle, rabbits and a poultry flock. The farm actively promoted itself as well as its products, in addition, discounts and gifts were offered to entice customers.

Farm no. 4 was located in Wola Stargardzka village in the Parysów municipality, Mazowieckie Voivodeship. The farm area had 21 ha, and was started by a man, aged between 31 and 40 years old, in 2008. The respondent

graduated a trade school unrelated to agriculture. In addition, the respondent participated in state organized organic farming courses. The farm did not hire any additional employees. The farm production included cereals and vegetables. A herd of cattle was kept along with a flock of poultry. The farm distributed and promoted its products on site.

Farm no. 5 was located 1 km away from Płosodrza village in the Mordy municipality, Mazowieckie Voivodeship. The farm had an area of 15 ha and was run by a man above 50 years old, since 1995. The respondent completed secondary education, specializing in agriculture. In addition, the respondent participated in state-organized organic farming courses. The farm did not hire any additional employees. The farm had a flock of 2500 laying hens and 1 cow. The farm distributed and promoted its products on site. The products were also showcased during agricultural fairs, festivals and other events, promoted on the Internet and through referrals as well.

Farm no. 6 was located near Wola Rębkowska in the Garwolin municipality, Mazowieckie Voivodeship. The farm had an area of 20.63 ha and was run by a man above 50 years old, since 2003. The respondent completed secondary education, specializing in agriculture. In addition, the respondent participated in state-organized organic farming courses. The farm did not hire any additional employees. The farm main production focused on crops and meat, with herds of cattle, pigs and a flock of poultry. The farm distributed its products on site and through local markets.

Farm no. 7 was located in Mokobody municipality, Mazowieckie Voivodeship. The farm had an area of 39.2 ha, and was run by a married couple, both above 50 years old, since 2009. The respondents had higher education, specializing in horticulture. The farm did not hire any additional employees. The farm specialized mainly in meat production, with herds of cattle, goats, horses and a flock of poultry. Products were promoted since the farm's establishment, including brochures, referrals, and Internet advertisements. The farm sold its products on site and through an organic food store.

Farm no. 8 was located in Dąbrówka Stany village in the Skórzec municipality, Mazowieckie Voivodeship. The farm had an area of 11.26 ha and was run by woman above 50 years old, since 2005. The respondent completed secondary education, specializing in agriculture. The farm did not hire any additional employees. The farm specialized in meat, cereal and vegetables, with herds of cattle, pigs and a poultry flock. The farm promoted and sold its products on site.

Farm no. 9 was located in Stare Litewniki village in the Sarnaki municipality, Mazowieckie Voivodeship. The farm had an area of 23 ha and was run by a man less than 30 years old. The farm was established by the respondent's

father in 2003. The respondent completed secondary education, specializing in agriculture. The farm did not hire any additional employees. Cattle, pigs, rabbits and a poultry were kept. The farm distributed its products on site and through an organic food store. Sales and promotion also took place during local agricultural festivals.

The gathered data indicates that most of the surveyed farms were owned by men – 55% of respondents. The minor share of 33% was represented by women, and 12% of farms were co-owned by a married couple. 78% of respondents graduated a secondary school specializing in agriculture, with only the married couple owning farm no. 7 having higher education, and the owner of farm no. 4 graduating from a trade school unrelated with agriculture.

Most of the surveyed farms were run by owners older than 50 years old – 45%, 22% of farm owners were younger than 30 years old, and 22% between 40 and 50 years old. Only 11% were between 30 and 40 years old. Most farm owners participated in organic farming courses before or during production conversion. State-organized courses, run by Mazovian Agricultural Advisory Centre (MODR), Agricultural and Food Quality Inspection (IJHARS) or other institutions, were taken by 66% respondents; 33% of respondents didn't participate

in any additional courses or training. Similar age and gender composition had been observed in a Lubuskie Voivodeship survey study carried out by Kurek [2008]. The percentage of farm owners with higher education is slightly lower than that in the study carried out by Bombik et al. [2015], in Lublin Voivodeship, where secondary school graduates made up 80% of respondents and 20% had higher education.

Most surveyed farms were run for at least 10 years and took between 2 and 3 years to convert to organic production. Farm no. 5 had the longest running organic production of 20 years; while farm no. 7, in the time of being surveyed, has had converted most recently and had been in the business of organic production for only 6 years.

The farm no. 2 was the largest and its area exceed 40 ha; the smallest one, farm no. 3, had an area of 7.03 ha. The average area of all surveyed farms is approximately 22 ha. All farms were made up of arable land, meadows and pastures – the difference was in the composition ratio – detailed composition was included in Table 1.

According to the preliminary survey carried out by the Agricultural and Food Quality Inspection (IJHARS) for the Framework Action Plan for Organic Food and Organic Farming in Poland for 2014–2020, the average size of organic farms in Poland in the year 2012 was 25.50 ha and organic farms in Mazowieckie Voivodeship had an average area of 23.52 ha [IJHARS 2014] – the average area of surveyed farms was slightly lower.

**Table 1.** Surveyed farms' land use composition in hectares

**Tabela 1.** Zagospodarowanie terenu w badanych gospodarstwach w hektarach

Farm Gospodarstwo	Arable land Grunty orne	Meadows and pastures Łąki i pastwiska	Permanent crops Uprawy wieloletnie	Orchards Sady	Forests Lasy	Habitat Siedlisko	Total area Powierzchnia całkowita
1	16.0	2.0	–	–	0.22	0.5	18.72
2	7.0	22.0	–	0.5	9.5	2.0	41.0
3	2.8	2.7	0.1	–	1.27	0.16	7.03
4	15.0	5.0	–	–	1.0	0.8	21.8
5	11.4	0.8	–	0.4	2.1	0.3	15.0
6	18.0	2.0	–	0.13	0.3	0.2	20.63
7	17.0	22.0	–	–	–	0.2	39.2
8	8.81	2.25	–	–	–	0.2	11.26
9	17.0	1.1	–	–	4.2	0.7	23.0

**Table 2.** Herd size of animals kept in the surveyed farms

**Tabela 2.** Liczebność stad zwierząt utrzymywanych w badanych gospodarstwach

Farm Gospodarstwo	Poultry Drób	Horses Konie	Cattle Bydło	Pigs Świnie	Rabbits Króliki	Goats Kozy
1	49	–	24	5	–	–
2	30	9	–	–	–	2
3	200	–	3	–	60	–
4	40	–	16	–	–	–
5	2500	–	1	–	–	2
6	80	–	19	2	–	–
7	700	4	20	–	–	20
8	45	–	5	2	–	–
9	15	–	1	60	130	–

Arable land made up the main part of 78% of surveyed farms, with only two farms having more meadows and pastures than arable land. Surveyed data indicates that the largest areas of arable land belonged to farm no. 1–18 ha with farm no. 7 and 9 being second with 17 ha each. Farm no. 3 had the smallest arable land area, 2.8 ha, while also being the largest part of the farm's land usage. Meadows and pastures were the main land usage types of the farms no. 2 and 7, taking up 22 ha in both farms. Three farms – no. 2, 5 and 6 – owned an orchard. Only farm no. 3 owned 0,1 ha of permanent crops. Forests found in most of the surveyed farms made up from 1.5% to 24% of total area, with the exception of farm no. 7 and 8, which had no forests at all. The largest habitat was found at the farm no. 2–2 ha; all remaining farms had less than 1ha of habitat.

While all surveyed farms were certified for organic table-egg production, most based their business on other organic products as well, crop production being the most popular. Crops most popular among respondents were:

rye, triticale, wheat and cereal-legumes mixture. The most popular pasture plants were: shamrock, lupine and grass mixtures.

None of the surveyed farms mixed organic and conventional production, despite it being allowed by legal regulations. This aligns with the results of Natchman's studies [Natchman 2010, Natchman 2012] showing that most organic farms in Poland practice mixed production, completely excluding conventional production.

Detailed numbers of animals kept in the surveyed farms are included in Table 2. 88% of respondents kept cattle, 44% kept pigs and 33% – goats. In addition, two farms also kept horses, and another two farms – rabbits. Most farms kept at least two other species and only one farm kept one other species. Besides organic table eggs, farms no. 3, 5 and 7 were also certified for organic poultry meat production. Farm no. 1 also specialized in certified duck egg production. Farm no. 5 held the largest poultry flock, counting 2500 laying hens. Farm no. 7 was second,

**Table 3.** Adaptation performed at surveyed farms to obtain the organic production certificate

**Tabela 3.** Zmiany wprowadzone w badanych gospodarstwach w celu uzyskania certyfikatu

Adaptation Zmiana	Surveyed farm Badane gospodarstwo								
	1	2	3	4	5	6	7	8 <sup>1</sup>	9
Livestock purchase Zakup zwierząt		+			+		+		
Land purchase Zakup ziem		+				+			
Abandoning the use of artificial fertilizers Zaprzestanie stosowania nawozów sztucznych	+			+	+				
Farm reorganisation Reorganizacja gospodarstwa								+	
Introduction of new livestock breeds Wprowadzenie nowych ras zwierząt					+			+	
Facilities preparation Dostosowanie budynków gospodarskich					+			+	
Enclosure preparation Dostosowanie wybiegów dla zwierząt	+	+	+	+	+	+	+		+
Pond construction Utworzenie oczka wodnego								+	
Other Inne									

<sup>1</sup> Farm no 8 did not need to perform adaptations to obtain the certificate.

<sup>1</sup> Gospodarstwo 8 nie musiało wprowadzać żadnych zmian by uzyskać certyfikat.

with 700 birds; farm no. 3 was third with 200 birds, and farm no. 6 was fourth with 80 birds. Other farms owned a flock of less than 50 birds. The smallest poultry flock was held by farm no. 9 and was composed of just 15 birds.

Most of the surveyed farms kept one breed of poultry, often the result of small size of the flock – only farms no. 3, 5 and 6 had more than one breed. The smallest flock consisted of 15 Green-legged Partridge chickens, and few farms kept more than two breeds and a flock exceeding 200 birds. The Green-legged Partridge chickens were the most popular breed among all respondents. The respondents based their choice of poultry breed on productivity in organic farm conditions, quality of produce and its reputation among customers, low living requirements and resistance to disease. The Green-legged Partridge chickens' eggs have a higher content of yolk and better ratio of n-6/n-3 fatty acids in comparison to other breeds, in addition to low cholesterol content [Trziszka et al. 2004]. They also exhibit lower stress levels when compared to Polbar and Leghorn breeds kept in similar conditions [Rozempolska-Rucińska et al. 2020]. This combination of desired traits contributed to their popularity. Other poultry breeds included: Rhode Island Red, Giant Cochin, Polbar chickens and Pekin ducks. Chicks were obtained from hatcheries or hatched on site, and the average production period was 2 years.

According to the survey, all respondents decided to convert to organic farming on their own, after assessing their farm production capacity and conversion requirements. All respondents learned about organic farming from the press and the Internet, and 66% of them took state-organized courses. In addition, two farm owners cooperated with universities and scientific institutions. The main argument for the conversion cited by the respondents was the health benefits of organic food products and concern for the environment. Rising popularity of organic products among consumers and ease of facilities and enclosures conversion were the reason why respondents took up organic table egg production; other reasons cited were the low price of animals, as well as lower labor input compared to larger livestock animals.

Adaptation performed to obtain the organic production certificate at surveyed farms has been compiled in Table 3. Respondent no. 8 claims that his farm needed no adaptations at all. All other farm owners had to adapt their farms. 88% of respondents had to modify their animal enclosures. 33% of respondents had to purchase new livestock and 33% had to abandon the use of artificial fertilizers. Other adaptations included: land purchase, farm reorganization, introduction of new livestock breeds, and pond construction. Changes were most significant in farm

no. 7, least significant in farm no. 9, and farm no. 8 did not need any additional adaptations.

Multiple surveys and studies, carried out in western countries, indicate that organic farming is beneficial to agriculture employment rates [Morison et al. 2005, Green and Maynard 2006, Finley et al. 2017], however, only one out of nine surveyed farms – farm no. 2, hired an additional employee as a result of organic farming conversion. This divergence may be attributed to the greater degree of parcellation of Polish farmlands and smaller average farm holding size in comparison to average farm size in the USA and UE [ARIMR 2017, USDA 2017, EUROSTAT 2018].

Every farm distributed its products on site and every owner could provide his customers with information about the products. In addition, two farms, no. 2 and 7, handed out brochures with information on sold products, and farm no. 3 even implemented a system of discounts. Farm no. 6 sold its products at the local markets and farm no. 7 and 9 delivered their products to an organic food store. The main venue of product promotion among the respondents were customer referrals and recommendations. 44% of respondents, while taking the survey, claimed that Internet advertisements had been providing better results for some time – especially in reaching new customers. According to the study carried out by Olech and Kuboń [2015], consumers often learn about the organic food through this medium, so an increase in effectiveness of Internet advertisements can be expected in the future.

For most of the respondents, recurring customers made up 80% of their sales and 20% were new customers. Respondent no. 7 claimed that 70% of his customers were recurrent and 30% were new. According to the farm owners, new customers were encouraged by product promotion and high quality. According to the respondents, most of organic products' consumers were families with children. Organic food was also often purchased by single adults, but seldom by teenagers.

Starting organic production and adapting the farm to meet all legal requirements, requires a monetary investment. The farm needs to be reorganized, new livestock must be purchased and building adapted. According to survey results, most respondents funded the conversion from their own savings, with only one respondent taking a bank loan. In addition, all respondents took organic farming direct payments, however, their opinions on whether the payments were satisfactory or not, were divided – only 44% of respondents considered received payments as adequate. All respondents stated that organic farming was more labor intensive than conventional farming. Despite this, only one of the respondents hired an additional employee. Opinions were divided whether organic production was profitable or not with 55% respondents claiming that organic production was indeed profitable,

and 45% of respondents stating otherwise. As such, it is no surprise that 55% of respondents want to develop their organic table eggs production further and 45% do not.

## CONCLUSIONS

Surveyed farms were mostly run by men above 40 years old. Secondary education with a specialization in agriculture was most common among respondents. Due to the restrictive regulations and exact conversion and organic production conversion rules, most respondents took additional courses.

Each surveyed farm practiced mixed organic production, producing organic table eggs along with crops, dairy and meat production. Most common farm animals, kept along with poultry, was cattle, with some farms keeping pigs, goats or rabbits. The most popular poultry breed was Green-legged Partridge chickens.

In most cases, the respondents chose poultry production due to the popularity amongst consumers, and ease of infrastructure adaptation.

Respondents sold their organic products directly at the farm, where consumers could purchase eggs, meat, vegetables and milk. Product advertisement relied heavily on direct consumer contact and referrals.

## ACKNOWLEDGEMENTS

This study was financed by the funds of the Ministry of Science and Higher Education of Poland (statutory research fund of the Siedlce University of Natural Sciences and Humanities No. 473/16/S).

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## CHARAKTERYSTYKA GOSPODARSTW EKOLOGICZNYCH ZAJMUJĄCYCH SIĘ PRODUKCJĄ JAJ KONSUMPCYJNYCH NA TERENIE WOJEWÓDZTWA MAZOWIECKIEGO

### STRESZCZENIE

Wzrost zamożności społeczeństw, rosnąca świadomość konsumentów, chęć nabywania żywności bezpiecznej i wysokiej jakości przyczyniają się do rosnącego zainteresowania żywnością pochodzącą z produkcji ekologicznej. W rezultacie część gospodarstw poddaje się procesowi certyfikacji swojej produkcji. Celem pracy jest analiza danych dotyczących charakterystyki gospodarstw ekologicznych, położonych na terenie województwa mazowieckiego, zajmujących się produkcją jaj konsumpcyjnych oraz dokonanych w nich zmian. W związku z tym przeprowadzono badania ankietowe wśród właścicieli gospodarstw ekologicznych położonych na terenie województwa mazowieckiego; wybrano 9 gospodarstw do charakterystyki. Pierwszy kwestionariusz dotyczył ogólnej charakterystyki respondenta, czynności wykonanych przed podjęciem produkcji ekologicznej prowadzących do uzyskania certyfikatu oraz sposobu sprzedaży i promocji produktów ekologicznych. Drugi kwestionariusz zawierał 10 pytań i skupiał się wyłącznie na produkcji drobiu. Charakteryzowane gospodarstwa najczęściej prowadzone były przez mężczyzn o średniej wieku powyżej 40 lat, którzy posiadają średnie wykształcenie. Każde z badanych gospodarstw prowadzi ekologiczną mieszaną produkcję, łączącą produkcję jaj z produkcją roślinną, mleczną czy mięsną. W badanych gospodarstwach oprócz drobiu najczęściej utrzymywane jest bydło, ale występuje też trzoda chlewna, kozy czy króliki. Najpopularniejszą rasą drobiu jest zielononóżka kuropatwiana. W większości przypadków wśród ankietowanych podjęcie produkcji drobiarskiej spowodowane było popularnością produktu wśród klientów oraz łatwością adaptacji budynków i wybiegów. Respondenci sprzedają swoje produkty ekologiczne bezpośrednio w gospodarstwie, gdzie można również nabyć jaja, mięso, warzywa czy mleko. Promocja opiera się przede wszystkim na bezpośrednim kontakcie z klientem i rekomendacjach; ogłoszenia w internecie zyskują na popularności.

**Słowa kluczowe:** gospodarstwa ekologiczne, drób, jaja konsumpcyjne, certyfikat produkcji ekologicznej