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## **ORGANIZATIONAL FORMS OF ORGANIC FARMS IN POLAND**

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### **ABSTRACT**

Organic farms form a perspective segment of the Polish agriculture, which have been developing very dynamically since Poland accession to the European Union (from 2004). Changes in the population of these agricultural holdings` group are the result of the growing demand for organic agricultural products, the growing environmental awareness of society, as well as current agricultural policy focused on agrienvironmental practices, for which farmers are remunerated in the form of subsidies. Organic production methods include good soil condition maintenance, plant nutritious needs and animal welfare requirements. Organic farms may be differently organised. There are three basic forms of organic farms organization, namely: farms that are in transition to organic production system (are implementing environmental practices in stages); farms that combine organic and conventional production system; farms organized solely according to the organic principles. Legal requirements strictly specify what features an organic farm should have, in each of the identified organisational forms. The aim of the article is to compare organizational forms of organic farms in Poland in terms of production and economic efficiency. There were analyzed organic farms in comparison to conventional farms included in Farm Accountancy Data Network 2015. The research were conducted on the basis of indicators analysis, considering calculation reflected costs, production, economics and subsidy value connected with the Common Agricultural Policy directed to farms.

**Keywords:** *organic farms, organizational forms, economic analysis, Farm Accountancy Data Network, Poland.*

### **INTRODUCTION**

Organic production is a system of farm management and food production combines best environmental practices, a high level of biodiversity, preservation of natural resources and application of high animal welfare standards (EC, 2007). This production is based on the use of the substance and natural processes that occur in nature, ensuring its quality. The use of organic method of agricultural production in accordance with the requirements of the soil, plants, animals and consumers` preferences characterizes this farms` group. Therefore, organic farms realize the concept of sustainable development of agriculture (Wrzaszcz and Zegar, 2015). For this reason, organic farms are an important, albeit niche group.

Organic farms are the demanded and the fast-growing form of environmental-friendly agriculture. Since Poland accession to the EU, there is observed dynamic growth in the number of organic farms and agricultural land. During the period of 2004-2014 the number of organic farms in Poland has increased around 7 times, from 3.7 thousand to 24.8 thousand. The surface of organic plants increased from 83.7 thousand ha to 657.9 thousand ha, nearly 8 times. Organic sector development is also reflected in the number of food-processing plants and the range of organic products. The number of organic food-processing plants increased from 50 in 2004 to 484 in 2014, which is almost 10 times (AFQI, 2015; MARD, 2017). Accelerating organic production growth was especially observed after 2005. In Poland since the end of 2004, a wide-ranging support directed to organic producers has been implemented, mainly within rural development programmes. Farmers also have received support through existing advisory structure. Institutional environment certainly has been essential, perhaps the most important, factor determining the development of this agricultural production system in Poland in the past dozen years.

The systematic increase in organic farms' potential in Poland should be regarded as a positive and desirable direction of agriculture development, and this is due to the many environmental, economic and social benefits, that they provide (Runowski, 2012), as well as correspond with the future model of agriculture, based on renewable resources and environmental-friendly practices (Zegar, 2012).

The aim of the article is to compare organizational forms of organic farms in Poland in terms of production and economic efficiency.

## MATERIALS AND METHODS

The analysis considered about 12 thousand individual farms covered by the Farm Accountancy Data Network in Poland in 2015<sup>1</sup>. There were analysed conventional (C), organic (ORG; organized according to organic system requirements; with legal certificate), and mixed farms, with parallel production, that combine two production system, namely: organic (certificated) and conventional (ORG&C) farms<sup>2</sup>. There were presented organizational and environmental issue, such as farm specialization and soil management<sup>3</sup>. The article focuses on production and economic results, including their effectiveness<sup>4</sup>.

## RESULTS AND DISCUSSION

The FADN farm population was dominated by conventional farms (96.7%, Table 1). Farms managed only according to the organic production principles accounted for only 2.5% of the analysed population (those farms held organic production

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<sup>1</sup> See: <http://fadn.pl/>

<sup>2</sup> Due to the insufficient number of organic farms in the reorganization process (only 12 farms), their results could not be published. According to the FADN methodology, analysed group must cover at least 15 farms.

<sup>3</sup> See method details of soil organic matter calculation in (Wrzaszcz, 2017).

<sup>4</sup> See method details of farms' effectiveness method in (Wrzaszcz and Zegar, 2015).

certificates). Some farms combined both production systems, i.e. conventional and organic, but they were the least numerous group (0.7%). In accordance with the law, combining both systems of production in the farm is possible, as far as environmental practices are observed in a specific part of the farm. Thanks to the separation of both production systems, farms may diversify their agricultural activity and thus obtain various sources of income.

The average farm keeping agricultural accounting had an area of 36 ha of agricultural land and generated income at the level of EUR 18 thousand. The value of crop and livestock production generated in those farms was comparable. The similar production potential, and the results obtained were characteristic of conventional farms. They will constitute a point of reference in the assessment of the situation of organic and mixed farms – combining both production systems.

**Organic farms** significantly differed *in minus* from conventional farms. Their production potential was lower (both the area and quality of land used, as well as the animal population). The stocking density in those farms was by almost 1/3 lower than that in conventional farms. This result indicated the relatively smaller scale of livestock production in organic farms. The value of livestock production slightly exceeded that generated from crop activities, although, of significant importance here was the structure of crop production. In organic farms, as much as 30% of the utilised agricultural area were permanent grassland, in conventional farms, it was 13%. Such land use resulted directly from the lower quality of soils in organic farms, and then livestock production adapted to these. The structure of the animal population was dominated by cattle (61%, in conventional farms it was 51%), while the pig population was only 12% (respectively, in conventional farms it was 44%). Interesting is the fact that organic farms developed the activity in the field of poultry production (here, poultry accounted for as many as 19% of the animal population, while in conventional farms this percentage was 5%). Organic farms also held more orchards (5% of the utilised agricultural area, while in conventional farms it was slightly more than 1%). The labour intensity of organic production was slightly higher, which was determined by both the legal requirements enabling only the incidental use of chemical plant protection products, as well as the more frequent specialisation in rearing grazing animals and fruit-growing production (Chart 1).

Table 1. Farms' characteristic and outcomes (average/farm)<sup>1</sup>

No.	Specification	C	ORG	ORG&C	ORG/C %	ORG&C/C %
1	Farms' number	11 701	304	88	2.5	0.7
2	Agricultural land, AL (ha)	35.84	27.44	40.91	77	114
3	Soil quality	0.83	0.60	0.65	72	79
4	Labour (AWU)	1.96	1.87	2.01	95	102
5	Livestock (LU)	27.85	15.09	15.05	54	54
6	Livestock/AL (LU/ha)	0.78	0.55	0.37	71	47
7	Assets (mln €)	0.34	0.21	0.27	61	77
8	Standard output (thous. €)	47.6	27.3	41.5	57	97
9	Standard gross margin (thous. €)	28.0	12.3	25.0	44	89
10	Total output (thous. €)	59.5	23.9	36.5	40	61
11	- Crop production (%)	51.1	44.5	66.4	#	#
12	- Livestock production (%)	48.0	53.7	32.4	#	#
13	- Other production (%)	0.9	2.9	1.3	#	#
14	Gross farm income (thous. €)	30.2	21.9	29.6	73	98
15	Family farm income (thous. €)	18.2	14.6	18.1	80	99
16	Gross investment (thous. €)	10.5	3.6	5.1	35	49
17	Net investment (thous. €)	1.2	-1.6	-2.9	#	#

<sup>1</sup> Soil quality – site index for soil classification; 1 Annual Work Unit is equivalent to full-time own and paid labour, i.e. 2,120 hours of work/year; 1 Family Work Unit is the equivalent of a full-time labour of a farming family member; 1 Livestock Unit is a conventional unit of farm animals with a mass of 500 kg; Standard output – the sum of standard value of all agricultural activities on the farm; Standard gross margins – the difference between output and specific (direct) costs of all activities occurring on the farm; Total output is the sum of crop and livestock production value and other activities; Gross Farm Income is the result of difference of total output and total intermediate consumption, adjusted for the outcome of the balance of current subsidies and taxes; Family Farm Income – net value added adjusted for the cost of total external factors and the balance of subsidies and taxes on investments (Bocian and Malanowska, 2014; Goraj, 2009; www.fadn.pl). The used exchange rate, 1EUR = 4PLN was used. Source: Prepared on the basis of FADN 2015 data.

**Organic farms** were also characterised by different organisation of crop production when compared to that in conventional farms. In case of organic farms, soil degrading plants had a lower share, for the benefit of soil structure forming plants. For example, cereals, industrial crops and root crops accounted for, respectively, 41%, 1% and 1.5%, while in case of conventional farms – 59%, 13% and 5%. They were characterised by a significant share of legumes (16%) and papilionaceous plants and field grasses (39%), which in conventional farms accounted for a symbolic part of sowings (respectively, 6% and 5%). This structure of sowing was certainly determined by limitations associated with the compliance with the prohibitions of applying mineral fertilisation and plant protection products, as well as the frequent concentration on cattle rearing, which resulted in internal balancing of fodder and fertiliser needs of organic farms. Thanks to the reproduction of soil organic matter as a result of growing soil structure forming plants and using natural fertilisers, the adequate restoration of soil fertility was provided in those farms (Table 2). The decisive disparity of organic farms became visible in case of production and economic results as well as investment activity

(Table 1). The greatest differences *in minus* were visible in the production value. In contrast, received support in a form of subsidies to the operational activity reduced by nearly half their production distance in relation to conventional farms. Finally, income of organic farms was lower by about 1/5 than the result of conventional farms. Those values translated into assets of organic farms and a possibility to reproduce them. Certainly, the investment needs of organic and conventional farms are different due to the different specificity of agricultural production. However, in the longer term, the lack of the sufficient investment activity will be gaining importance due to the further consumption of assets and a need to introduce adequate organisational changes in the farm, which will translate into the account of the agricultural producer.

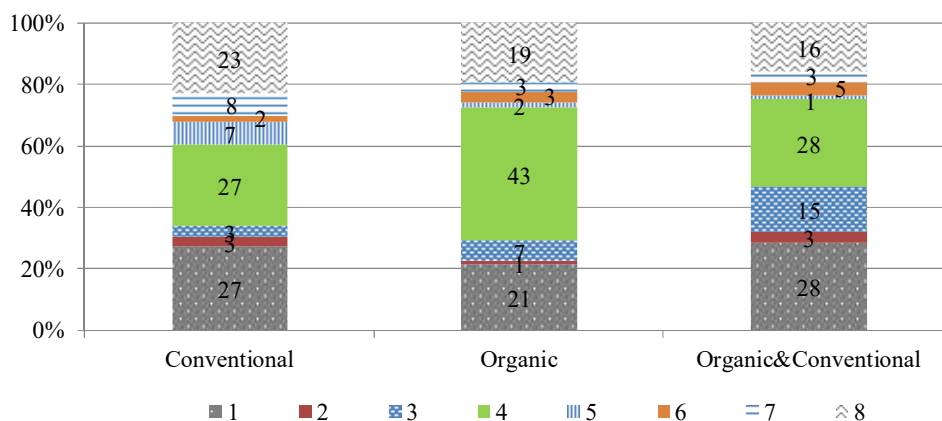


Chart 1. Farming type structure

Types: specialised in field crops (type I), horticulture (II), permanent crops (III), rearing grazing livestock (IV) and granivores (V), nonspecialised with mixed crops (VI), mixed livestock (VII) and mixed crops and livestock (VIII). Source: Prepared on the basis of FADN 2015 data.

Table 2. Elements of soil organic matter balance (SOMB in t/ha)

No.	Specification	C	ORG	ORG&C
1	Crop degradation	-0.60	-0.26	-0.34
2	Crop reproduction	0.12	0.74	0.69
3	Crop balance [1+2]	-0.48	0.48	0.34
4	Natural fertilizers	0.68	0.48	0.32
5	Organic fertilizers	0.44	0.09	0.21
6	<b>SOMB [3+4+5]</b>	<b>0.64</b>	<b>1.05</b>	<b>0.88</b>

\*Source: Prepared on the basis of FADN 2015 data.

Mixed farms, some part of which are managed according to environmental principles and some according to the conventional system, were characterised by the definitely bigger utilised agricultural area and the lower stocking density when

compared to conventional farms (by about 15% and 50%). Those farms were characterised by a high share of orchards (6.5%). As shown in Chart 1, they were relatively often specialised in fruit-growing production. The structure of field crops in mixed farms should be considered to be more beneficial in terms of the reproduction of soil organic matter when compared to conventional farms, although mixed farms were inferior to organic farms in this regard (Table 2). They had a 47% share of cereals, as well as a 36% share of legumes and field grasses (in conventional farms, it was, respectively 59 and 4.5%). In case of livestock production, it was dominated by cattle (63%) and pigs (28%). The production result of mixed farms was lower than that achieved by conventional farms (lower by about 40%), although it was more beneficial when compared to certified organic farms. The production value in mixed farms was, to a greater extent, determined by crop production. Income categories (both gross value added and income) corresponded to the values achieved by conventional farms. The differences between the analysed groups of farms with regard to the production value were reduced through support in a form of subsidies as well as cost advantages.

The efficiency of management is determined by the productivity and profitability of the production factors. The components of this account are illustrated in Table 3. The average land productivity in analysed farms amounted to EUR 1.6 thousand. In case of organic and mixed farms, this result was lower by nearly half. Those differences indicated a limited ability to produce the volume of organic production from a unit of the agricultural area, and then, the supply of organic products. Organic farms are bound by significant restrictions on the use of mineral fertilisers and plant protection products, which significantly determines the level of their productivity. In these farms, average costs spent for this purpose accounted only for a few percent of expenses incurred by conventional farms. Mixed farms, due to combining the organic and conventional management system, incurred higher costs of production means when compared to organic farms but still those costs were definitely lower than in conventional farms (lower by about 60%).

Subsidies received by organic farms definitely exceeded the value of transfers addressed to conventional farms, in particular those obtained with respect to the implementation of the agri-environmental programme. Support related to this programme substantially reduced the economic distance between organic and mixed farms and conventional farms. The stream of subsidies to the operational activity in case of organic farms corresponded to the half of the value of total output, which indicates their important role in shaping the economic situation. In case of mixed farms, this indicator amounted to more than 40%. For comparison, in conventional farms this value was only 16%. Subsidies to the organic system largely applied to the fruit-growing activities. In agricultural holdings taking up organic production (certified and mixed), also the depreciation value, derived from assets and investment activity, remained below the value corresponding to conventional farms. In addition, lower costs of external factors were in favour of organic farms. It should also be pointed out that differences in the level of costs associated with the operation of organic, mixed and conventional farms were not

nearly so high as in case of the production value. Finally, both lower costs of the operation of organic farms, along with significant support in a form of subsidies, equalised income of organic and conventional farms per area unit. The economic situation of mixed farms was less beneficial. In case of the productivity and profitability of labour inputs, organic farms were left behind conventional farms, while mixed farms developed a significant advantage. According to the FADN methodology, subsidies are included in the farm's income account. However, excluding this element, relationships of the highlighted groups of farms in terms of the profitability of the production factors would be different – definitely, to the detriment of organic farms. With this calculation, the land profitability in organic and mixed farms, when compared to the result of conventional farms, would be lower by 58% and 73%, while in case of the labour profitability the result would be lower by 64% and 66%, respectively. In case of certified organic farms, income was mainly determined by external support in a form of subsidies, where more than 80% of income came from this source of financing. Mixed farms were dependent on those funds even more (85%). For comparison, in the average farm, about half of income came from received subsidies. These indicators show the importance of government programmes supporting this form of agricultural activity in the operation of environment-friendly farms.

Table 3. The main economic calculation categories

No.	Specification	C	ORG	ORG&C	ORG/C %	ORG&C/C %
1	<b>Total output (€/ha AL)</b>	<b>1 661</b>	<b>871</b>	<b>892</b>	<b>52</b>	<b>54</b>
2	<i>Total output (thous. €/AWU)</i>	30.4	12.8	18.2	42	60
3	Total intermediate consumption (€/ha AL)	1 053	481	520	46	49
4	- total specific costs (€/ha AL)	3 118	1 070	1 335	34	43
5	-- fertilisers (€/ha AL)	190	15	72	8	38
6	-- crop protection (€/ha AL)	73	2	26	2	36
7	Balance on current subsidies & taxes (€/ha AL)	234	409	351	175	150
8	- agri-environmental subsidies (€/ha AL)	14	148	103	1 086	753
9	-- organic subsidies (€/ha AL)	1	126	92	25 200	18 419
10	<b>Gross farm income (€/ha AL)</b>	<b>843</b>	<b>799</b>	<b>723</b>	<b>95</b>	<b>86</b>
11	<i>Gross Farm Income (thous. €/AWU)</i>	15.4	11.7	14.7	76	96
12	Depreciation (€/ha AL)	259	190	196	73	76
13	<b>Farm net value added (€/ha AL)</b>	<b>584</b>	<b>610</b>	<b>527</b>	<b>104</b>	<b>90</b>
14	<i>Farm net value added (thous. €/AWU)</i>	10.7	9.0	10.7	84	101
15	Total external factors	95	79	98	83	103
16	Balance on investment subsidies & taxes (€/ha AL)	-24	-12	-17	#	#
17	<b>Family farm income (€/ha AL)</b>	<b>509</b>	<b>533</b>	<b>443</b>	<b>105</b>	<b>87</b>
18	<i>Family farm income (thous. €/FWU)</i>	10.7	9.4	11.9	88	112
19	<b>Current subsidies/Total output (%)</b>	<b>16</b>	<b>49</b>	<b>42</b>	<b>#</b>	<b>#</b>
20	<b>Current subsidies/ Farm income (%)</b>	<b>52</b>	<b>81</b>	<b>85</b>	<b>#</b>	<b>#</b>

\*Source: Prepared on the basis of 2015 FADN data.

## CONCLUSIONS

Organic farms have various organisational form. They include certified organic farms (fully adapted to the requirements of the system, implementing the practices throughout the farm), farms shifting to organic production (partly adapted, in the reorganisation process), as well as mixed, combining both organic and conventional production systems, whereby agricultural activities carried out under these systems are separated.

So far, organic farms are a niche fraction of farms in Poland, although they are of particular importance in production due to the growing demand for organic products and environmental services, as they fit in the sustainable model of agriculture.

Organic and mixed farms differ from conventional farm in terms of the production potential, production organisation, production and economic results and investment activity. In case of organic and mixed farms, the production potential is smaller than expected, production organisation is more environment-friendly, and the outcomes are definitely lower.

Organic and mixed farms are predominantly specialised entities with the production specificity differing from that in conventional farms. The former are more often specialised in cattle rearing and fruit growing which is dictated by, *inter alia*, production conditions (lower quality of soils, high share of permanent grasslands).

The productivity of the production factors (land and labour) in organic and mixed farms differs significantly *in minus* from that in conventional farms.

The profitability of the production factors (land and work) is comparable among the analysed groups of farms, which results from reducing the differences in the productivity thanks to lower costs of the operation of farms with organic production, and generally higher transfers in a form of subsidies to the operational activity. In the situation, where subsidies are not included in the income account, an important economic distance characterises farms with the organic production comparing them with conventional farms.

The efficiency of organic and mixed farms to a much greater extent is dependent on government support (subsidies) when compared to conventional farms. These farms could not operate without these subsidies.

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