Zagadnienia Ekonomiki Rolnej

Translation from Polish

WOJCIECH ZIĘTARA
JOLANTA SOBIERAJEWSKA
Institute of Agricultural and Food Economics
– National Research Institute
Warsaw

COMPETITIVENESS OF THE POLISH FRUIT FARMS

Abstract

The paper presents competitiveness and efficiency of the Polish fruit farms against similar farms from selected European Union countries. The analysis covered farms specialising in fruit trees and bushes covered by FADN monitoring in 2007-2009 and 2011-2013. Competitiveness of the researched fruit farms was determined by competitiveness index calculated as a ratio of farm income to costs of using own factors of production: land, labour and capital (as in: W. Kleinhanss). Whereas effectiveness was described by the index of productivity of land, assets and labour.

Competitive abilities were demonstrated by Polish fruit farms with economic size of EUR 25-50 thousand of SO and EUR 50-100 thousand of SO and area of 17.70 ha of UAA and 38.80 ha of UAA, respectively. These abilities were also demonstrated by Hungarian farms of the clases of EUR 50--500 thousand of SO, Romanian – EUR 100-500 thousand of SO, German – EUR 50-500 thousand of SO, French – EUR 25-50 thousand of SO, Italian – EUR 500 thousand of SO and more, and Spanish – EUR 100-500 thousand of SO. Area of competitive fruit farms from Western European countries was lower than that of the Polish farms in corresponding economic size classes.

Keywords: fruit farms, economic size of farms, competitiveness, efficiency.

JEL Cods: D2, D24, D3, D33, O1.

Introduction

Agriculture – similarly to other sectors of the national economy – features processes of production specialisation and concentration. This is manifested by the growth in the share of farms specialising in specific directions of production and by increasing the farm area. In the recent several decades, the phenomenon caused a stronger impact of "differentiating" forces, which are located in the market and induce farms to specialise and concentrate production[1].

Poland is a major fruit producer in the European Union. In 2013, Poland was ranked fourth in terms of the share of fruit production (6.7%) behind such countries as: Spain (28.5%), Italy (26.8%) and France (13.2%). It was an absolute leader in the production of apples, though. In 2013, the share of Poland in the production of apples in the EU was 26.3%, while in the case of Italy – 18.7% and France – 17.8%. Fruit and their products are a vital element of foreign trade in agri-food products. In 2012-2015, their share in export of agri-food products ranged from 10% to 7%. A clear downward trend in this share resulted from a higher growth rate of export of agri-food products. In the import of these products, the share of fruit and their products was higher – by approx. 11% – mainly due to fresh fruit, especially citrus fruit.

The share of fruit and their products in export of agri-food products in 2012--2015 was, on average, at the level of 8.5% and was by over threefold higher than the share of the area of permanent crops (mainly orchards) in the utilised agricultural area (UAA) which in 2014 was 2.36%. This was influenced by higher land productivity under permanent crops. In 2014, the value of commercial production of fruit per 1 ha of UAA was PLN 11.76 thousand, while commercial plant production was only PLN 2.14 thousand per ha of UAA.

Fruit production contributed to fuller use of the production potential of the Polish agriculture, so far not fully utilised.

Given the significance of fruit production on farms in the Polish agriculture, it is necessary to research their efficiency and competitive abilities. These farms do not compete directly with farms from other countries. Direct competition on the EU and global markets involves trade and processing companies, but their competitiveness is preconditioned by costs of raw materials (fruit and vegetables) produced on farms (Woś, 2003).

Research aim and methods

The research aimed at assessment of effectiveness and competitiveness of the Polish fruit farms against similar farms from selected countries of the European Union (EU). The research covered farms specialising in farming of fruit

---

[1] According to Brinkmann two groups of forces influence agriculture, namely "differentiating" and "integrating" forces. Differentiating forces exist in the farm environment, mainly in the market and they incline to production specialisation and concentration, while "integrating" forces are inside a farm and incline the farm to multi-directional production, emphasising fuller use of factors of production as a result of using internal relations and interdependencies (1922).

trees and bushes (excluding vines and olives) covered by the FADN[2] monitoring system as type 36. The share in fruit production (in 2013) in the EU and their location were taken as the criteria for selection of countries. Table 1 presents the share of Poland in production of fruit and vegetables in the EU.

Table 1

The share of Poland in the production of fruit in the European Union in 2013

Countries	Fruit production (thousand tonnes)		Share in fruit production (%)	
	Total	Including apples	Total	Including apples
Spain	17 699	546	28.5	4.6
Italy	16 371	2 217	26.8	18.9
France	8 183	1 737	13.2	14.8
Poland	4 129	3 085	6.7	26.3
Germany	2 334	804	3.8	6.8
Romania	2 294	493	3.7	4.2
Hungary	1 280	552	2.1	4.7

Source: *Rocznik Statystyczny Rolnictwa*, GUS 2015, pp. 428; 429.

Research of efficiency and competitiveness of fruit farms was held in two periods. The first one covered only the Polish fruit farms between 2008 and 2014. Whereas the second covered assessment of the Polish fruit farms at the background of similar farms from selected EU countries in two periods: 2007-2009 and 2011-2013. In the first period the assessment was held against the Hungarian and German farms, while in the second – additionally against French, Italian and Romanian farms.

The year 2013 was the last year for which the European FADN data were available (at the moment of the analysis FADN data for years later than 2013 were not available). Research covered farms broken down into classes by UAA of farms, considering the economic size expressed in the Standard Output (SO) value in EUR thousand per farm. Six of the following economic size classes were separated: very small EUR 2–<8 thousand; small EUR 8–<25 thousand; medium-small EUR 25–<50 thousand; medium-large EUR 50–<100 thousand; large EUR 100–<500 thousand and very large >= EUR 500 thousand of SO. Table 2 gives figures for farms covered by research in respective countries. The number of researched farms was different and the research did not cover farms from all economic size classes. Italy had the fullest representation of farms, as it had farms in all size classes, while German farms had the weakest representation – only in the class of EUR 50-100 thousand of SO and EUR 100-500 thou-

---

[2] FADN – Farm Accountancy Data Network.

sand of SO. The Polish fruit farms were noted in the first four classes. No data for farms in some classes followed from the fact that the participation of farmers in the research was voluntary and the minimum number of farms in a group was 15. The analysis was based on average values for the researched three-year period which was justified by low variability. The characteristic of researched farms was based on calculated indices concerning the production potential, production organisation, costs and effects[3].

Table 2

Number and size of researched farms in 2011-2013

Countries	Economic size of farms (EUR thousand of SO)					
	<8	8-25	25-50	50-100	100-500	>500
	Number of researched farms with permanent crops (fruit farms, type 36)					
Poland	15-<40	200-<500	100-<200	15-<40	*	*
Hungary	*	15-<40	15-<40	15-<40	15-<40	*
Romania	15-<40	40-<100	*	*	15-<40	*
Germany	*	*	*	15-40	100-<200	*
Netherlands	*	*	*	*	15-<40	*
France	*	*	15 -<40	40-<100	200-<500	*
Italy	15-<40	200-<500	200-<500	200-<500	100-<200	15-<40
Spain	40-<100	200-<500	100-<200	100-<200	100-<200	*

Source: European FADN.

The competitiveness index (Wk), as in Kleinhanss (2015), was used to determine the farm competitiveness level.

The competitiveness index (times) was determined as the quotient of income from a farm and the sum of estimated costs of use of own factors of production: own labour, land and capital (equation 1)[4]. The value of the competitiveness index $Wk>=1$ points to complete coverage with income of the costs of own factors of production, while $Wk<1$ to incomplete coverage with income of the costs. Following Kleinhanss, further Wk classification was assumed, differentiating the classes as below: Wk (-) – for negative Dzgr ($Wk1$); $0<Wk<1$ – partial coverage of costs of own factors of production ($Wk2$); $1=Wk<2$ – complete coverage of costs of own factors of production ($Wk3$); $Wk>=2$ – twofold or

[3] Full list of indices was given in the work by Ziętara and Sobierajewska (2012).

[4] The cost of own labour of farmers and their family members was determined at the level of cost of hired labour in similar economic size classes. The cost of use of own land was set at the level of rental fee in given economic size classes. The costs of own capital were taken at the level of interest rate on long-term government bonds.

higher coverage of costs of own factors of production (*Wk*4). The competitiveness index *Wk*4 points to complete competitive ability of a farm. This statement complies with the opinion of Biswanger, who argues that an enterprise able to develop should achieve profit rate two-time higher than interest rate on loans (Biswanger, 2014).

$$Wk = \frac{Dzgr}{Kwz + Kwp + Kwk} \tag{1}$$

where:
Wk   – competitiveness index,
Dzgr – farm income,
Kwz – opportunity cost of own land,
Kwp – opportunity cost of own labour,
Kwk – opportunity cost of own capital (excluding own land).

    This paper defines competitiveness as the ability of a farm to develop. Farm gets such an ability, when the income from a farm twice covers the costs of own factors of production. This approach is different from the traditional definition of competitiveness which terms it as getting advantage (in terms of costs, price, quality, etc.) against the competition. Authors earlier termed competitive abilities of farms using the category of "entrepreneur's profit"[5] (Ziętara and Zieliński, 2015). But doubts arose whether the former approach was correct. Farms do not compete directly on the EU and global market; trade companies compete on the markets. Therefore, determining competitiveness of a farm as an ability of a farm to develop under market conditions of a given country seems valid.

Place and significance of fruit farming in the Polish agriculture

    Fruit production plays a major part in the Polish agriculture, despite a minor share in the utilised agricultural area (UAA). In 2010-2014, this share was below 3% (2.76-2.97%), but the share of fruit in the commercial production of agriculture was over two-times higher (5.5-6.9%). This was preconditioned rather by the value of commercial production from fruit farming per 1 ha of UAA than from plant production (PLN 1.81-2.49 thousand per ha of UAA). Fruit and their products were a vital component of export. In 2010-2014, its value increased from EUR 1159.4 million to EUR 1907.0 million, i.e. by 64.5%. Most of fruit and their products (approx. 68%) were exported to the European Union (Table 3).

---

[5] Entrepreneur's profit was calculated as a difference between the farm income and opportunity costs of use of own factors of production (labour, land and capital).

Table 3

Selected characteristics of fruit farming in Poland in 2010-2014

Specification	Years			
	2010	2012	2013	2014
UAA (thousand ha)[a]	14 448.0	14 529.0	14 410.0	14 424.0
Permanent crops (thousand ha)[b]	410.0	431.8	424.7	398.2
Share of permanent crops in UAA (%)	2.83	2.97	2.94	2.76
Commercial plant production (PLN thousand per ha of UAA)	1.81	2.29	2.49	2.17
Commercial fruit production (PLN thousand per ha)	7.59	10.47	12.95	10.10
Share of fruit in commercial agricultural production (%)	5.2	6.0	6.9	5.2
Export of fruit and their products in EUR million	1 159.4	1 793.8	1 907.0	1 703.8
Import -"-	1 266.8	1 399.0	1 574.7	1 649.5
Balance -"-	-107.4	394.4	332.3	54.3
Share of the EU export (%)	68.8	63.8	65.3	68.2

[a] UAA in good agricultural condition; [b] orchards and fruit trees

Source: *Rocznik Statystyczny Rolnictwa* (GUS, 2015); *Analizy rynkowe* (2014-2016).

Fruit production notes processes of production concentration which is evidenced by decreasing number of orchards (Table 4). The greatest drop in the number of these farms (74%) took place in 2002-2010 – from 316.7 thousand in 2002 to 81.7 thousand in 2010. In the next period (2010-2013), the drop amounted to approx. 22%. The number of fruit farms dropped the most in the group of small farms up to 1 ha (in 2002-2013 from 261 thousand to 3.9 thousand, i.e. by 98%). What increased was the number of farms above 1 ha (by 6.3%), especially of farms above 5 ha (by 109%). As a result of these processes, the average area of a fruit farm increased from 3.6 ha in 2002 to 6.23 ha in 2013 (approx. 73%). The occurring concentration processes should be assessed as positive because they are an evidence of professionalization of fruit farming.

Table 4

Number of fruit farms in Poland in 2002-2013

Specification	Fruit farms					
	2002		2010		2013	
	Number in thousand	%	Number in thousand	%	Number in thousand	%
Total	316 760	100.0	81 739	100.0	63 868	100.0
up to 1 ha	260 995	82.3	27 317	33.4	3 938	6.2
>1 ha	56 371	17.7	54 422	66.6	59 930	93.8
including >5 ha	11 532	3.6	20 198	24.7	24 162	37.8
Average area of a farm	3.6	x	5.01	x	6.23	x

Source: W. Ziętara and J. Sobierajewska (2012); Program Wieloletni 2011-2014; PSR 2010; GUS, 2012; GUS, 2015.

Competitiveness of the Polish fruit farms in 2008-2014

The analysis was based on data from farms covered by the Polish FADN monitoring system in 2008-2014. Adoption of this period resulted from availability of source data. Assessment of efficiency of competitiveness of the researched fruit farms was done given the farm size expressed in UAA. According to this criterion, 6 fruit farm classes were separated. Table 5 gives respective figures. The area of researched fruit farms in respective classes was stable in subsequent years. In the class of the smallest farms (up to 5 ha) it was from 3.8 ha in 2008 to 4.3 ha in 2011. In the next classes, the average farm size was at the level of, respectively: 7.6, 14, 24, 39 and 100 ha. Analysis of figures in Table 6 points to a major variability of economic results in respective years (the worst were years: 2008 and 2014).

In these years none of the farms, irrespective of the size, showed economic abilities; the competitiveness index *Wk* was below 1 which indicates lack of development abilities. Farms of the two smallest classes (up to 5 ha and 5-10 ha) did not have development abilities in all of the analysed years. The competitiveness index was below 1. The situation improved in 2010-2013, because all fruit farms of more than 10 ha were characterised by development abilities, including farms of above 50 ha which can be considered as competitive (the *Wk* index was above 2).

Concluding the remarks made so far, it should be stated that the competitiveness index accurately determines competitive abilities of farms. It is closely correlated with the level of "entrepreneur's profit". Negative "entrepreneur's profit" (loss) causes that the value of the competitiveness index is below 1. However, achievement of farm income at parity level does not predetermine the competitive abilities of a farm.

<div align="right">Table 5</div>

Characteristics of the Polish fruit farms in 2008-2014

Specification	Farm economic size classes in ha of UAA					
	<=5	5-<=10	10-<=20	20-<=30	30-<=50	>50
2008						
UAA (ha)	3.8	7.6	14.1	23.7	40.7	107.4
Entrepreneur's profit (thousand per farm)	-26.9	-26.2	-37.5	-20.7	-9.8	-29.1
Income parity (%)	46.8	96.1	108.3	173.9	288.7	256.9
Wk index (times)	0.32	0.57	0.54	0.78	0.91	0.77
2009						
UAA (ha)	3.9	7.6	14.0	23.1	38.9	103.3
Entrepreneur's profit (thousand per farm)	-23.7	-29.2	-35.4	-16.0	-27.9	87.2
Income parity (%)	43.3	73.3	88.6	160.9	178.7	572.3
Wk index (times)	0.33	0.49	0.51	0.82	0.69	1.60
2010						
UAA (ha)	4.2	7.7	14.1	23.9	39.5	102.9
Entrepreneur's profit (thousand per farm)	-17.9	-18.9	0.3	91.5	50.8	190.4
Income parity (%)	67.5	85.8	162.9	377.4	375.5	790.6
Wk index (times)	0.51	0.65	1.00	2.07	1.59	2.30
2011						
UAA (ha)	4.3	7.6	14.3	24.2	40.4	105.2
Entrepreneur's profit (thousand per farm)	-24.2	-8.3	30.4	61.9	-20.8	175.9
Income parity (%)	60.9	123.7	231.3	316.8	169.0	853.3
Wk index (times)	0.46	0.86	1.38	1.67	0.77	2.06
2012						
UAA (ha)	4.2	7.6	14.2	24.2	39.7	98.6
Entrepreneur's profit (thousand per farm)	-29.1	-14.9	11.2	60.1	69.6	147.5
Income parity (%)	53.6	114.0	194.9	313.9	372.2	700.0
Wk index (times)	0.39	0.76	1.13	1.62	1.76	1.92
2013						
UAA (ha)	4.2	7.6	14.1	23.6	37.1	93.6
Entrepreneur's profit (thousand per farm)	-.24.6	-19.5	14.9	8.9	41.9	169.7
Income parity (%)	58.7	95.2	186.1	177.0	308.5	622.6
Wk index (times)	0.47	0.68	1.19	1.10	1.47	2.21
2014						
UAA (ha)	4.1	7.5	13.7	24.3	38.5	94.3
Entrepreneur's profit (thousand per farm)	-33.6	-40.5	-28.7	-21.6	-27.7	-.9.3
Income parity (%)	20.7	26.2	79.9	109.4	110.6	212.3
Wk index (times)	0.17	0.28	0.59	0.74	0.67	0.91

Source: L. Goraj, M. Bocian, D. Osuch (2009-2015).

Competitiveness of the Polish fruit farms at the background of similar farms from the selected EU countries in 2007-2009 and 2011-2013

In the first period (2007-2009) competitiveness of the Polish fruit farms was presented at the background of similar farms in Hungary, Germany and the Netherlands. Among Polish farms, competitive abilities were shown only by farms of 26.7 ha of UAA, whose *Wk* was 1.48. Farms of 12.96 ha failed to show such abilities – *Wk* at the level of 0.87. Hungarian farms of: 9.44; 23.45 and 60.16 ha of UAA did not have competitive abilities, *Wk* was at the level of, respectively: 0.33, -0.22 and 0.37. Among German farms competitive abilities were noted by farms of: 13.65 ha and 43.46 ha of UAA with *Wk* at the level of 1.0 and 1.62, respectively. Dutch farms of 22.73 ha of UAA did not show a tendency to develop; *Wk* for them amounted to 0.81 (Ziętara and Sobierajewska, 2012).

Table 6 presents the numbers characterising competitive abilities of fruit farms in the second period (2011-2013). It results from them that all the farms from researched countries in the following classes had no competitive abilities: <EUR 8 thousand and EUR 8-25 thousand of SO. From the next class, EUR 25-50 thousand of SO, Hungarian, Italian and Spanish farms did not show such abilities. In the class of EUR 50-100 thousand of SO, French, Italian and Spanish farms had no competitive abilities and in the class of EUR 100-500 thousand of SO – Dutch and Italian farms.

There is a close link between *Wk* and the entrepreneur's profit. The aforementioned groups of non-competitive farms were excluded from further analyses. The numbers given in Table 6 show that competitive abilities in the economic size class of EUR 25-50 thousand of SO were noted for Polish and French fruit farms, in class of EUR 50-100 thousand of SO – Polish, Hungarian and German farms, while in the class of EUR 100-500 thousand of SO – Hungarian, German and Spanish farms as well as Italian farms in the class of =< EUR 500 thousand of SO. Fully competitive were only the Romanian farms in the class of EUR 100-500 thousand.

Competitive abilities of the Polish fruit farms at the background of selected countries in 2011-2013

EUR thousand of SO	Poland	Hungary	Romania	Germany	Netherlands	France	Italy	Spain
Competitiveness index *Wk* (times)								
< 8	0.43	-	0.52	-	-	-	0.18	0.34
8-25	0.72	0.52	0.83	-	-	-	0.46	0.61
25-50	1.02	0.90	-	-	-	1.14	0.59	0.63
50-100	1.00	1.74	-	0.99	-	0.87	0.75	0.84
100-500	-	1.51	2.34	1.44	0.73	1.45	0.86	1.09
>500	-	-	-	-	-	-	1.13	-
Entrepreneur's profit (EUR thousand per farm)								
<8	-5.85	-	-4.47	-	-	-	-13.66	-11.76
8-25	4.25	3.59	-1.70	-	-	-	-11.92	-8.65
25-50	0.47	0.43	-	-	-	3.99	-14.36	-10.18
50-100	0.41	19.33	-	-0.10	-	-3.46	-12.04	-6.5
100-500	-	26.21	45.11	19.60	19.49	16.75	-11.28	5.3
>500	-	-	-	-	-	-	26.50	-
Income parity A2 (%)								
< 8	35.6	-	53.5	-	-	-	14.8	36.4
8-25	67.7	64.7	98.1	-	-	-	40.9	69.7
25-50	129.7	193.5	-	-	-	99.7	66.1	70.4
50-100	185.0	451.9	-	54.1	-	63.8	99.4	112.0
100-500	-	1419.1	3089.1	97.6	81.5	126.7	168.5	186.5
>500	-	-	-	-	-	-	500.8	-

Source: European FADN.

A question arises: what are the organisational and economic characteristics of farms able to compete and competitive? The next Table 7 shows the relevant numbers. Given the fact that fully competitive were only the Romanian farms in the class of EUR 100-500 thousand of SO, they were not separately analysed.

The area of fruit farms able to compete was highly differentiated between the examined countries and showed a link with economic size. In the countries of Western Europe it was lower than for farms of Eastern Europe. In the class of EUR 25-50 thousand of SO the area for Poland was at 17.70 ha, while for France, it was at only 8.10 ha of UAA and in the class of EUR 50-100 thousand of SO the area of Polish and Hungarian farms was close to each other (respectively, 38.80 and 40.70 ha of UAA), and in Germany it amounted to only 9.10 ha of UAA. In the class of EUR 100-500 thousand of SO Hungarian and Romanian farms used approx. 100 ha of UAA each, while German, French and Spanish farms: 22.40;

38.80 and 32.40 ha of UAA, respectively. In the largest class of EUR 500 thousand of SO and more, there were only Italian farms that used 93.50 ha of UAA.

The share of leased land was also differentiated. It showed an upward trend along with a growth in economic size of farms. In the economic size classes of EUR 25-100 thousand of SO, the share of leased land was from 10.40% (Poland) to 54.60% (France). For Hungarian and German farms it was 14.50% and 25.10%, accordingly. In class of EUR 100-500 thousand of SO it was much higher – from 43.50% (Germany) to 88.20% (France). The only exceptions were Italy and Spain, where the share of leased land was at the level of, respectively, 23.4% and 25.8%.

Total labour input in AWU per farm increased along with a growth in economic size of farms and were lower for farms from Western Europe. For Polish and Hungarian farms in economic size classes of EUR 25-100 thousand of SO they ranged from 3 (Hungary) to 4.4 (Poland) AWU, while for French and German farms they were at the level of 1.8 and 1.9 AWU, accordingly (by approx. 50% lower). In the class of EUR 100-500 thousand of SO the labour inputs on Hungarian and Romanian farms were at approx. 10 AWU per farm, while on German, French and Spanish farms – approx. 4.5 AWU and were lower by 55% than in the first group. The share of own labour was also differentiated and it dropped along with a growth in economic size of farms. For German and French farms in the class of EUR 25-100 thousand of SO, it was approx. 65%, by approx. 22 percentage points more than on Polish and Hungarian farms. In the class of EUR 100-500 thousand there was a much lower share of own labour in total inputs. For Hungarian and Romanian farms it was at the level of, respectively, 5.10% and 4.3%, while for German, French and Spanish farms – from 27.4% to 35.80%. For Italian farms, the share of own labour in the highest class was at the level of 11.40%.

The value of assets per 1 ha of UAA was negatively correlated with the economic size of farms. In the class of EUR 25-50 thousand of SO on Polish farms it came close to that of French farms and amounted to approx. EUR 18 thousand per ha of UAA. In the remaining classes it was lower and included in the range from EUR 4.6 thousand (Romania) to EUR 16.10 thousand per ha of UAA (Spain). The only exception were German farms where the value of assets in the classes of EUR 25-50 thousand and EUR 50-100 thousand of SO was, accordingly, EUR 49.50 thousand and EUR 35.80 thousand per ha of UAA. It reached an exceptionally high level in the highest class on Italian farms – EUR 51.10 thousand per ha of UAA.

A characteristic feature of fruit farms able to develop is a major share of the area of orchards in the UAA (Table 7). For all of the researched farms it exceeded 50% (most often ranging from 60% to 80%). The largest number of orchards was on Polish farms in the class of EUR 25-50 thousand of SO, and Italian farms in the class of EUR 500 thousand of SO and more, respectively, 81.8% and 82.7%, and the number was the lowest on French farms in the class of EUR 100-500 thousand of SO – 51.7%. The high share of orchards in the UAA was reflected in the production structure, in which plant production predominated.

Its share on all farms exceeded 90%, except for German farms where it was lower and amounted to, respectively, 84% and 88% in the class of EUR 50-500 thousand of SO (Ziętara and Sobierajewska, 2016).

Table 7

Factors of production for Polish fruit farms able to develop and competitive at the background of selected countries

EUR thousand of SO	Poland	Hungary	Romania	Germany	France	Italy	Spain
Utilised agricultural area (ha of UAA)							
25-50	17.70	-	-	-	8.1-	-	-
50-100	38.80	40.70	-	9.10	-	-	-
100-500	-	94.70	115.10	22.40	38.80	-	32.40
>=500	-	-	-	-	-	93.50	-
Share of leased land (%)							
25-50	10.40	-	-	-	54.60	-	-
50-100	10.40	14.50	-	25.10	-	-	-
100-500	-	62.40	57.80	43.50	88.20	-	25.80
>=500	-	-	-	-	-	23.40	
Total labour input (AWU/farm)							
25-50	3.60	-	-	-	1.80	-	-
50-100	4.40	3.00	-	1.90	-	-	-
100-500	-	10.10	9.70	4.30	5.90	-	3.20
>=500	-	-	-	-	-	13.60	-
Share of own labour (%)							
25-50	50.20	-	-	-	68.50	-	-
50-100	36.30	36.7-	-	61.00	-	-	-
100-500	-	5.10	4.30	35.80	27.40	-	32.60
>=500	-	-	-	-	-	11.40	-
Value of assets (EUR thousand per ha of UAA)							
25-50	19.20	-	-	-	17.10	-	-
50-100	11.80	7.30	-	49.50	-	-	-
100-500	-	8.10	4.60	36.20	10.50	-	16.10
>=500	-	-	-	-	-	51.10	-
Share of orchards in the share of UAA per farm (%)							
25-50	81.80	-	-	-	71.00	-	-
50-100	73.90	69.40	-	63.90	-	-	-
100-500	-	72.50	77.70	76.60	51.70	-	75.70
>=500	-	-	-	-	-	82.70	-

Source: European FADN.

There was a clear differentiation in the level of production intensity determined by the volume of costs in total per 1 ha of UAA. For Polish, Hungarian and

Romanian farms these costs were approximated (from EUR 1.50 thousand in Romania to EUR 2.85 thousand per ha in Hungary) and lower than for the remaining farms. For Italian and Spanish farms these were higher – within the range of EUR 3-4 thousand per ha of UAA. Definitely the highest level of production intensity was typical of fruit farms in Germany and France, where total costs per 1 ha of UAA were EUR 6.8-8.9 thousand per ha, around 3 times more than for Polish, Hungarian and Romanian farms (Ziętara and Sobierajewska, 2016).

Land productivity determined by the production value per 1 ha of UAA for Polish, Hungarian and Romanian farms was similar (from EUR 1.88 thousand to EUR 3.65 thousand per ha) and lower than for fruit farms of other countries. The lowest land productivity was typical of Spanish farms (EUR 4.26 thousand per ha), it was much higher for German and French farms, respectively, EUR 7.43 thousand and EUR 11.40 thousand per ha. The highest was typical of Italian farms where it was EUR 25.21 thousand per ha in the class of EUR 500 thousand of SO and more.

Productivity of assets was less differentiated: on all farms except for the French ones it ranged from 0.19 (Polish farms) to 0.45 (Romanian farms). On French farms it was, accordingly, 0.64 and 0.71 in the class of EUR 25-50 thousand of SO and EUR 100-500 thousand of SO, thus it was much higher.

Labour productivity determined by the production value per 1 AWU, similar on Polish, Hungarian and Romanian farms (from EUR 18 thousand to EUR 27 thousand per AWU) was twice lower for farms of the countries of Western Europe, where it reached from EUR 37 thousand to EUR 58 thousand per AWU. It was the lowest on Polish farms where it was at EUR 18 thousand per AWU, while its highest level was noted for German farms (EUR 58 thousand per AWU) (Ziętara and Sobierajewska, 2016).

Conclusions

Poland is a major fruit producer in the European Union. In 2013, Poland was ranked fourth – with the share of fruit at the level of 6.7% – behind countries such as Spain, Italy and France. Additionally, Poland was an absolute leader in the production of apples, with the share of 26.3%. The fruit production in Poland covered strong concentration processes: in 2002-2013 the number of fruit farms dropped by 73%. Consequently, the average area of a fruit farm increased from 3.61 ha to 6.23 ha.

Competitive abilities were demonstrated by Polish fruit farms with economic size of EUR 25-50 thousand of SO and EUR 50-100 thousand of SO, which used, respectively, 17.70 and 38.89 ha of UAA. Competitive abilities were also demonstrated by French farms from the class of EUR 25-50 thousand of SO; Hungarian and German farms from the class of EUR 50-100 thousand of SO; Hungarian, Romanian, German, French and Spanish farms from the class of EUR 100-500 thousand of SO and Italian farms from the class of EUR 500 thousand of SO and more.

There was a principal difference in the production potential between fruit farms from the countries of Eastern Europe (Poland, Hungary, Romania) and

farms from the countries of Western Europe (Germany, the Netherlands, France, Italy and Spain):

- The farms from the first group had larger UAA. In the class of EUR 25-50 thousand of SO, UAA of Polish farms had 17.7 ha, which was over two times more than for French farms; the class of EUR 50-100 thousand of SO, UAA of Polish and Hungarian farms occupied approx. 40 ha – over four times more than for German farms; in the class of EUR 100-500 thousand of SO Hungarian and Romanian farms had 95 and 115 ha of UAA, accordingly, while German, French and Spanish from 22 to 39 ha of UAA.
- The analysed farms used leased land to a different degree. The share of leased land increased along with a growth in the economic size and was much higher for farms from the countries of Eastern Europe. In the the case of farms in the class of EUR 25-100 thousand of SO it amounted to, respectively, 10% and 14%, while in the class of EUR 100-500 thousand of SO on Hungarian and Romanian farms it was at approx. 60%, and on French – 88%.
- The value of assets showed a downward trend along with a growth in the economic size of a farm. There were no clear differences between the analysed groups of farms in the field. Definitely the highest value of assets was typical for farms from Germany and Italy (within the range of EUR 36-51 thousand per ha of UAA), in the remaining groups of farms it was lower: from EUR 4.6 thousand (Romania) to EUR 19.2 thousand (Poland) per ha of UAA.
- Production organisation, determined by the share of orchards in UAA, was similar for all of the researched farms (over 70%). The only exception were French farms of economic size of EUR 100-500 thousand of SO, where orchards occupied 52%. Production structure was similar for all of them – it was predominated by plant production with the share of over 85%.
- There were differences in the production intensity level. Total costs per 1 ha of UAA for all farms, apart from the German and French ones, were at the level from EUR 1.5 thousand per ha (Hungary, Romania) to EUR 3.87 thousand per ha (Italy). For German and French farms it ranged from EUR 6.84 thousand to EUR 8.96 thousand per ha and was over twice higher than the costs on other farms.
- Land productivity determined by the production value per 1 ha of UAA for Polish, Hungarian and Romanian farms ranged from EUR 1.88 thousand to EUR 3.65 thousand per ha, which was over three times lower than for German, French and Italian farms, where it ranged from EUR 9.4 thousand to EUR 25.21 thousand per ha.
- Productivity of assets showed lower level of differentiation. It was similar for Polish, Hungarian, German, Italian and Spanish farms (from 0.17 to 0.36) and much higher only for French farms (0.64 and 0.71).
- Labour productivity for Polish, Hungarian and Romanian farms (from EUR 17.82 thousand to EUR 27 thousand per AWU) was two times lower than for other countries.

Literature:

Analizy Rynkowe (2014-2016), no. 39-43, Warszawa: IERiGŻ-PIB.

Biswanger, H.Ch. (2011). *Spirala wzrostu, pieniądz, energia i kreatywność w dynamice procesów rynkowych*. Poznań: ZYSK I S-KA.

Brinkmann, T. (1922). *Die oekonomik des landwitschaftlichen Betriebes*. Grundriss der Sozialoekonomik. Tübingen.

Goraj, L., Bocian, M., Osuch, D., Smolik, A. (2009-2015). *Parametry techniczno-ekonomiczne według grup gospodarstw rolnych uczestniczących w polskim FADN w latach 2008-2014*. Warszawa: IERIGŻ-PIB.

Kleinhanss, W. (2015). Konkurencyjność głównych typów gospodarstw rolniczych w Niemczech. *Zagadnienia Ekonomiki Rolnej, no*. *1*(342), pp. 25-41.

Rocznik Statystyczny Rolnictwa 2014. GUS, Warszawa 2015.

Statistisches Jahrbuch über Ernährung, Landwirtschaft und Forsten 2014 Landwirtschaftsverlag. Münster.

Ziętara, W., Sobierajewska, J. (2012). *Gospodarstwa ogrodnicze w Polsce i w wybranych krajach Unii Europejskiej*. Warszawa: IERiŻ-PIB.

Ziętara, W., Sobierajewska, J. (2016). Efektywność polskich gospodarstw ogrodniczych na tle analogicznych gospodarstw z wybranych krajów. In: W. Józwiak (ed.), *Przedsiębiorstwo i gospodarstwo rolne wobec zmian klimatu i polityki rolnej (2)*. Program Wieloletni 2014-2020, No. 28, pp. 86-116, Warszawa: IERiGŻ-PIB.

Ziętara, W., Zieliński, M. (2012). Efektywność i konkurencyjność polskich gospodarstw rolniczych nastawionych na produkcję roślinną. *Zagadnienia Ekonomiki Rolnej, No*. *1*(330), Warszawa.

Ziętara, W., Zieliński, M. (2015) Organizacja i efektywność polskich gospodarstw specjalizujących się w uprawach polowych na tle gospodarstw wybranych krajów. In: *Przedsiębiorstwo i gospodarstwo rolne wobec zmian klimatu i polityki rolnej* (joint paper ed. by prof. dr hab. Wojciech Józwiak). Warszawa: IERiGŻ-PIB.

WOJCIECH ZIĘTARA
JOLANTA SOBIERAJEWSKA
Instytut Ekonomiki Rolnictwa i Gospodarki Żywnościowej
– Państwowy Instytut Badawczy
Warszawa

KONKURENCYJNOŚĆ POLSKICH GOSPODARSTW SADOWNICZYCH

Abstrakt

W artykule przedstawiono konkurencyjność i efektywność polskich gospodarstw sadowniczych na tle analogicznych gospodarstw wybranych krajów Unii Europejskiej. Analizowano gospodarstwa specjalizujące się w uprawie drzew i krzewów owocowych, objęte systemem monitoringu FADN w latach 2007-2009 i 2011-2013. Konkurencyjność badanych gospodarstw sadowniczych określono wskaźnikiem konkurencyjności, obliczonym jako stosunek dochodu z gospodarstwa rolnego do kosztów użycia własnych czynników produkcji: ziemi, pracy i kapitału (za W. Kleinhanssem). Efektywność natomiast opisano wskaźnikami produktywności ziemi, aktywów i pracy.

Zdolnościami konkurencyjnymi wykazały się polskie gospodarstwa sadownicze o wielkości ekonomicznej 25-50 i 50-100 tys. euro SO i powierzchni odpowiednio:17,70 i 38,80 ha UR. Zdolnościami tymi wykazały się także gospodarstwa węgierskie z klas 50-500 tys. euro SO, rumuńskie z klasy 100-500 tys. euro SO, niemieckie z klas 50-500 tys. euro SO, francuskie z klasy 25-50 tys. euro SO, włoskie z klasy 500 i więcej tys. euro SO oraz hiszpańskie z klasy 100-500 tys. euro SO. Powierzchnia konkurencyjnych gospodarstw sadowniczych z krajów Europy Zachodniej była mniejsza od gospodarstw polskich w odpowiednich klasach wielkości ekonomicznej.

Słowa kluczowe: gospodarstwa sadownicze, wielkość ekonomiczna gospodarstw, konkurencyjność, efektywność.