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STATUS AND DEVELOPMENT TRENDS OF POLISH HORTICULTURAL DURING 1999-2009*

STAN I KIERUNKI ROZWOJU POLSKIEGO SADOWNICTWA
W LATACH 1999-2009

Key words: horticultural, orchard farm, variety name of apple

Słowa kluczowe: sadownictwo, gospodarstwa sadownicze, odmiany jabłek

Abstract. In this article raw statistical data from the Central Statistical Office, the Research Institute of Pomology and Floriculture in Skierniewice, the Institute of Agricultural and Food Economics – National Research Institute have been used. The author's research covers the period from 1999 to 2009. Trends of the pomology development in Poland have been presented in the article. Changes in cultivation areas have been introduced as well as dominant species of apples have been pointed out. The most frequently cultivated species were Idared, Jonagold, Champion, Gloster and Cortland. The mentioned apple species require high costs for plant protection.

Introduction

Pomology is one of the most dynamic branches of agriculture. It delivers fruit which are the inherent element of human nutrition. Fresh fruit are good sources of vitamins and minerals. They can be very effective in reducing life style diseases. In Poland rural areas cover 29 139.8 hectares (93.2% of land area of Poland) simultaneously with 329 thousand hectares of permanent crops (1.05% of farmland areas – data for the year 2009) as well as with 38.6% of the population inhabited (14.7 million). In the coming years orchard farms will be forced to face the rising competition on the domestic as well as South European markets, where the biggest part of our fruit production is sold. Fruit farming is still facing, on one hand, the growing labor and investments costs, on the other hand, the falling prices of fruit [Makosz 2005]. One of the feasible strategies of orchard farms, reducing the negative influence of the mentioned factors, is increasing the productivity on 1 hectare and the improvement of fruit quality. Pomology is also one of the branches of Polish agriculture, which maintain comparatively high share of technology and the highest percentage of high educated orchard farmers.

In the article the documentary method [Stachak 1997] based on information gathered previously for the purposes of agricultural, social and economic policy has been used. Information about economic facts has come from the documents had been produced by the relevant government institutions such as newsletters, reports and elaborations as well as the institutions specializing in gathering information, inter alia the Central Statistical Office, and produced for the scientific objectives like reports, elaborates, analyses by the research institutes and centers (inter alia the Research Institute of Pomology and Floriculture in Skierniewice (further: ISiK) and the Institute of Agricultural and Food Economics – National Research Institute). The aim of the article is to determine status and directions of changes in pomology in Poland. The research covers the period from 1999 to 2010.

The importance of the pomology in Poland

Poland is one of the leading producers of fruit in Europe. There are 319 thousand orchard farms in Poland, wherein 90% are small farms with orchard acreage less than 1 ha. According to the ISiK estimations there are approximately 40 thousand orchard farms which deliver fruit to the market (commercial fruit production). The orchard farms of very high European quality are in turn appro-

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Table 1. Orchard acreage in thousand hectares in Poland during 1995-2009
Tabela 1. Powierzchnia sadów w Polsce w latach 1995-2009 tys. ha

Years/Lata	Area of orchards [thous. ha]/ Powierzchnia sadów [tys. ha]
1995	278.6
1996	249.4
1997	250.1
1998	253.6
1999	255.1
2000	256.7
2001	258.1
2002	271.0
2003	250.4
2004	277.6
2005	296.5
2006	292.4
2007	336.8
2008	329.4
2009	331.4

Source: Statistical Yearbook... 2005-2008
 Statistical Yearbook... 2009-2010
*Źródło: Rocznik Statystyczny ... 2005-2008,
 Rocznik Statystyczny ... 2009-2010*

industry associations with local authorities which promote both the region and the products from the given area of orchard. In the case of the surface structure of orchard cultivation it should be noticed that in 2002, 72.5% of farms cultivated the orchard areas bigger than 1 hectare. In the following years of observation the structure of orchard cultivation has changed. The percentage of farms cultivating the orchards on the area of one hectare and less has reduced to 27.5% in 2002 and 5.2% in 2005 and in the following years to 4.4% and 3.9% in 2007 [Gospodarstwa rolne... 2005, Statistical Yearbook of Agriculture and Rural Areas 2009]. The highest dynamics of changes concerns the holding farms exceeding 100 hectares and bigger – in this group the orchard acreage has increased more than 25 times, in the farms with areas from 20 to 50 hectares of farmlands – more than 8 times (Tab. 2).

Varietal structure in orchard farms in Poland during 1999-2009

One of the essential criteria for the orchard farms to be successful is the selection of the varieties of fruit trees. The income per hectare of orchard depends, on one hand, on sensitivity of some tree species to frost, scab, powdery mildew, spring frost and, on the other hand, the regularity of yield and demand. The specialist literature [Makosz 2005] points to the need to adjust the varietal structure of fruits, so as to decrease the proportion of industrial fruit in the national production and increase the share of dessert apples. The improvement of the fruit quality and the system of distribution (connections between transport system, storage and subjective structure of the fresh fruit market) can open and strengthen the position of domestic orchardmen on international markets. However, the lack of sufficient investment can contribute, according to E. Makosz, to a substantial reduction in demand for fruits (up to 300 thousand tons) [Makosz 2005]. Simultaneously the specialization in fruit production must be pointed as well. The dominant varieties of fruit are in fact apples. The growing areas of apple trees range between 160 and 175 thousand hectares (Fig. 1). The second most commonly cultivated fruit species is a cherry, which areas of growth fluctuate within 35.5 thousand hectares and a plum cultivated in the area of 21 thousand hectares (Fig. 1). At the same time it's worth stressing that the walnut acreage, whose area increased from 3.5 thousand hectares in 2002 to 20.1 thousand hectares in 2009, is the fastest growing sector. It's most likely connected to the EU subsidies to this type of permanent crops.

ximately 10% [Makosz 2005]. Orchard farmland occupies 1,08% of total farmland areas of Poland in 2007 and they grow systematically for several years. During the research period of 1995 to 2008 two basic periods can be noticed [Pizło 2001]: first one are years 1996-2001 during which there was very slight growth of orchard areas (in comparison for example to 0.28% growth in the years 1996 and 1997 and 0.55% growth in 2000 and 2001). The second period from 2002 (excluding the years 2003 and 2007, during which the orchard production has been harmed because of the weather) was the time of the dynamic growth of orchard acreage. The average growth has been 3.81% of total area. It has to be noticed, that both intensive growth of orchard acreage in Poland and technical innovations used mainly in establishing new orchards or convert the existing orchards into modern ones, cause the growth of fruit production in Poland. During the years 2006-2009 the orchard acreage fluctuates between 292.4 and 336.8 thousand hectares reaching its maximum in 2007 (Tab. 1). Modern intensive technologies used in fruit production [Mika 2002] together with the growing acreage allow rich fruit harvest.

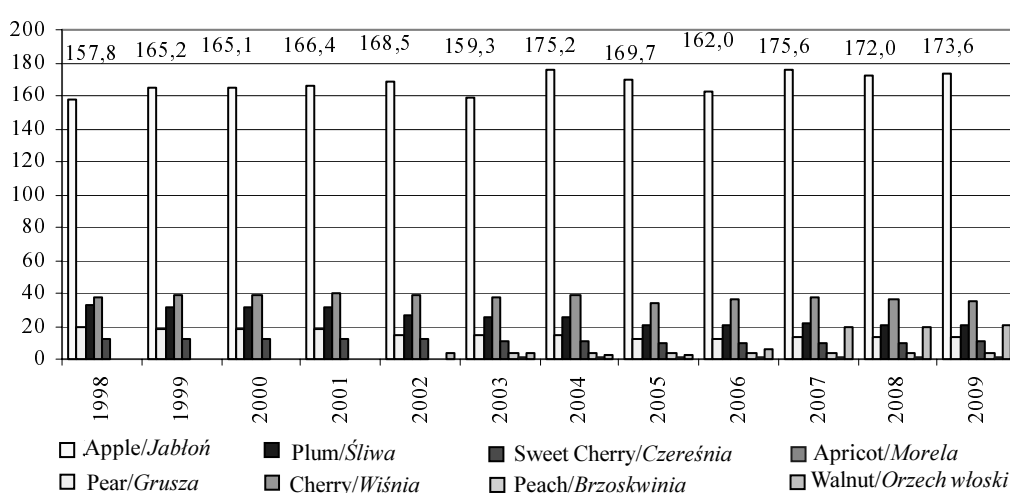
Growing competition on the fresh fruit market causes the rising export of fruit to Central European markets (mainly Russia, Ukraine and Belarus as well the Baltic countries). The requirements for the wholesale and the retail trade regarding the acceptable size of one commodity lot and its quality are growing. The increasing competitiveness on the market contributes to the necessity of carrying out marketing campaigns by big producers and indu-

Tabela 2. Orchard acreage according to the area groups of individual farms in the area groups of farmlands in the years 2002, 2005-2007
Tabela 2. Powierzchnia sadów według grup obszarowych gospodarstw indywidualnych w grupach obszarowych użytków rolnych w latach 2002, 2005-2007

Area groups of farmlands/ Grupy obszarowe użytków rolnych	Orchard acreage in [thous. ha]/ Powierzchnia sadów [tys. ha]				The orchard surface structure [%] (comparison year to year)/ Struktura powierzchni sadów [%] (porównanie rok do roku)			
	Years/Lata							
	2002	2005	2006	2007	2005	2006	2007	2002:2007
Total/Ogółem	316 760	296 461	292 356	336 826	93.59	98.62	115.21	106.33
1 ha and less/1 ha i mniej	87 213	15 525	12 732	13 154	17.8	82.0	103.3	15.1
Exceeding 1ha/Powyżej 1 ha	229 547	280 935	279 625	323 673	122.4	99.5	115.8	141.0
From 1 to 2 ha/Od 1 do 2 ha	49 293	19 440	17 459	22 591	39.4	89.8	129.4	45.8
From 2 to 3 ha/Od 2 do 3 ha	29 088	19 445	21 033	22 476	66.8	108.2	106.9	77.3
From 3 to 5 ha/Od 3 do 5 ha	42 135	44 305	42 708	45 748	105.2	96.4	107.1	108.6
From 2 to 5 ha/Od 2 do 5 ha	71 223	63 750	63 741	68 224	89.5	100.0	107.0	95.8
From 5 to 10 ha/Od 5 do 10 ha	59 571	86 031	85 400	97 789	144.4	99.3	114.5	164.2
From 10 to 15 ha/Od 10 do 15 ha	24 888	46 644	44 465	47 490	187.4	95.3	106.8	190.8
From 15 to 20 ha/Od 15 do 20 ha	10 863	23 543	20 229	24 919	216.7	85.9	123.2	229.4
From 10 to 20 ha/Od 10 do 20 ha	35 751	70 187	64 694	72 409	196.3	92.2	111.9	202.5
From 20 to 30 ha/Od 20 do 30 ha	7 937	17 047	16 642	19 386	214.8	97.6	116.5	244.2
From 30 to 50 ha/Od 30 do 50 ha	3 708	8 273	11 161	12 903	223.1	134.9	115.6	348.0
From 20 to 50 ha/Od 20 do 50 ha	11 645	25 320	27 803	32 289	217.4	109.8	116.1	277.3
From 50 to 100 ha/Od 50 do 100 ha	1 289	5 430	7 581	10 684	421.3	139.6	140.9	828.9
100 ha and more/100 ha i więcej	775	10 777	12 947	19 687	1390.6	120.1	152.1	2 540.3

Sources: Statistical Yearbooks of Agriculture and Rural Areas 2005-2008

Źródło: Roczniki Statystyczne Rolnictwa i Obszarów Wiejskich 2005-2008


Figure 1. The cultivated area of fruit trees in 1998-2009
Rysunek 1. Powierzchnia upraw drzew owocowych w latach 1998-2009

Sources: own study based on The results... 1999-2010

Źródło: opracowanie własne na podstawie Wyniki produkcji... 1999-2010

In the case of apples, the growing competition on international (not domestic) markets of apple varieties grown by the producers from the countries outside the EU should be noticed. Also monitoring the consumer preferences, particularly in international markets, can contribute to the competitiveness of domestic producers. The competitiveness of the orchard farms positively affects the choice of the best varieties of fruit, while maintaining their diversity. Constantly ongoing replacement of old varieties in Polish orchards helps to improve the assortment structure on the domestic market and matching the requirements of foreign markets.

In the variety structure of apples in 2009 the following species dominated: Idared (27,948 ha), Jonagold (19,884 hectares), Champion (17,650 hectares), Gloster (10,346 hectares) and Cortland (15,005 hectares) – Figure 3. The characteristic feature of Polish orchard farming is the great variability of apple harvest (Tab. 3). The harvest size for several apple varieties in the analyzed period 1999-2009 was different. Thus the harvest volume for Idared variety ranges from 128 thousand tons to 443 thousand tons, accordingly for Lobo – from 78 thousand to 236 thousand tons and for Cortland from 76 thousand tons to 245 thousand tons of apples (minimum values for other selected varieties of apples and the median are given in Table 3).

Tabela 3. Maximum and minimum values, median in the harvest volume of the selected main varieties of Apple in Poland in 1999-2009

Tabela 3. Wartości maksymalne, mediana i minimalne w wielkości zbiorów wybranych głównych odmian jabłek w Polsce w latach 1999-2009

Apple varieties/ Odmiany jabłek	Harvest of selected varieties of apple/ Zbiory wybranych odmian jabłek		
	max. harvest value/ max wielkość zbiorów	median/ mediana	min. harvest value/ min wielkość zbiorów
Idared	4 428 929	3 438 208.5	1 277 314
Lobo	2 363 978	2 014 224.5	787 927
Cortland	2 445 574	2 020 215.0	758 848
Jonagold	3 356 975	2 189 487.5	988 575
Champion	3 078 771	2 075 103.0	858 272
Gloster	2 105 846	1 462 135.5	503 734
Ligol	1 519 899	828 491.5	161 329

Source: see tab. 2

Źródło: jak w tab. 2

The variability of yield of each variety is important for the revenue stability, and thus for the revenue of orchard farms. At the same time the right choice of the varieties which require less kinds of sophisticated treatments is very important for the bearing costs. Modern varieties, which are better resistant to some plant diseases including e.g. scab, which reduces the costs of inter alia plant protection products borne by orchard farmers can be also pointed (Tab. 4). Simultaneously the sensory evaluation of the majority of varieties indicates that their taste doesn't differ from apples grown as a dessert ones [Kruczyńska, Rutkowski 2003].

The variability of yield of several varieties of apples can be seen even more clearly during the analysis of their volume per 1 ha of orchard acreage. Yields for 'Idared' variety fluctuated between 46.1 dt in 2007 and 162.7 dt in 2003. For the vast majority of apples varieties the largest apple crop from 1 hectare was in 2008.

Tabela 4. Comparison of impact of the scab on the example of the selected varieties (w latach 1998-2001)
Tabela 4. Porównanie wpływu parcha jabłoni na przykładzie wybranych odmian (in 1998-2001)

Variety name (land of origin)/ Nazwa odmiany (kraj pochodzenia)	The extent of scab infection in 2002 (scale 1-9)/ Stopień porażenia przez parcha jabłoni w 2002 r (skala 1-9)		Average weight of a fruit/ Średnia masa owocu	The share of fruits with a diameter less than 7,0 cm/ Udział owoców o średnicy > 7,0 cm	The share of fruit with a blush of more than half the surface of the fruit/ Udział owoców z rumieńcem większym niż połowa powierzchni owocu
	fruit/owoce	leaves/liście			
Freedom (Canada)	9	9	175.3	86.7	90.1
Florina (France)	9	9	146.5	71.2	92.7
Sawa (Poland)	9	9	171.4	89.5	80.6
Odra (Poland)	9	9	135.4	65.9	99.5
Redkroft"	7	7	143.9	67.2	99.9
Ligol (Poland)	1	1	217.0	96.8	74.5
Pinova (Germany)	1	1	107.9	27.9	74.2

Source/Źródło: Szklarz 2003

Summary

Despite the dramatic revenue decline, the pomology is one of the fastest growing sector of agriculture, as evidenced by the increasing acreage of orchards. One of the possible ways of changes can be also specialization resulting from the concentration of fruit sales on the foreign markets, mainly eastern markets, but also those that accept the highest quality of fruit, located on the rich Arab and Asian countries. Monitoring of the consumers' preferences, especially in international markets, can contribute to the rise of competitiveness among domestic producers. There is no doubt that the orchard acreage is growing, which can be interpreted, on one hand, as a positive signal to market, because it concerns the matter of investment into an orchard farm, on the other hand, as an attempt to rescue the revenues of households through increasing crop acreage. Some producers, especially with small acreage and diversified production of various fruit who bear high costs of orchard cultivation caused by choosing the costly varieties, can be eliminated from the market in the near future. It should be agreed with the views formulated in literature about the increasing specialization as well as the qualitative and quantitative growth of a group of orchard farms which runs their farms on a very high European level. Nowadays the main areas with high concentration of fruit production in Poland are (and seem to be in the near future) Masovian, Lublin and Łódź provinces.

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Streszczenie

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