ACTA SCIENTIARUM POLONORUM *Oeconomia 7 (1) 2008, 33–44*

MARKET FACTORS IN THE DEVELOPMENT OF AGRICULTURAL SEED PRODUCTION (ON THE EXAMPLE OF POTATO)

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Abstract. Potatoes comprise such species of crops which experienced the greatest fall in the production of seeds in 1989–2006. There is a need and an economic justification to revert the decreasing tendencies in seed production and to increase the usage of qualified seed-potatoes in agriculture by 2–3 times. In light of the analysis, which was carried out, it is the demand factors, i.e. size of production and profitability of agriculture, quality of seed-potatoes and level of marketing, which are the major barriers in the restoration of seed production. Meanwhile, there is a need to limit the barriers which hamper the increase of supply (profitability of seed production, phytosanitary requirements, short life cycle of the cultivar). In 2005–2006 there has been a significant increase in market prices of seed--potatoes. The elimination of most of the barriers in market development that are discussed in the paper is necessary to rebuild seed production.

Key words: seed production, potato, market, barriers and chances of developments

INTRODUCTION

Seed market comprises one of the segments of potato market and potentially one of the most profitable directions in the production of this crop. Meanwhile, it plays the role of a contractor of the most basic means of production in relation to the remaining directions of potato usage, especially goods production. New cultivars and qualified seed material are the carrier of biological progress [Chotkowski 2007]. Biological progress constitutes one of the most important factors which decrease cost absorptiveness of productivity and limit its unfavourable activity on the environment. An approach which favours biological progress over other factors of production (e.g. mechanisation or chemical progress) stems from the fact that there are no limits as to the size of farms and productivity, therefore, small family-owned farms, which dominate the Polish agriculture, may take advantage of it [Woś 2003].

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The use of valuable cultivars and healthy seeds as elements of biological progress in the adjustment of the whole production sphere and potato economy to the growing demands of both, domestic and international market, requires a seed sector that will be well-functioning. This enables the farmers to increase their harvest and improve its quality which means the potato's enhanced competitiveness on the market. Hence the need to overcome the crisis in Polish potato market and the restoration of seed production and market are a priority in the interests of agricultural policy. The attention of seed production companies who are sellers of seeds as well as the state's politics should be focused on the effect of the increase of demand on qualified seed-potatoes, meanwhile taking into consideration the supply factors.

The aim of the paper is to identify the most important market barriers which hamper the restoration of seed market on the example of seed-potatoes.

TENDENCIES IN THE POTATO SEED PRODUCTION

Potato seed production in the EU is concentrated on four countries: the Netherlands, Germany, France and Great Britain, which occupy 75% of the total land area of potato crops. The share of seed plantations in the overall area of potato crops is on average 5.7% in the EU countries, including the Netherlands (24% which is directed at the seed-potato

Table 1. European Union countries with the largest area of potato seed plantations
Tabela 1. Kraje Unii Europejskiej z największą powierzchnią plantacji nasiennych ziemniaka

No	Country	Seed area		Share of seed plantations in general crops area %	Area of seed production per 100 tons of marketable production, ha
		2005 [ha]	dynamics 2000–2005 2000 = 100		
1.	Netherlands	38 682	100.0	24.0	6.9
2.	Germany	16 436	82.1	5.9	1.8
3.	France	14 983	102.3	9.6	3.3
4.	Great Britain	14 322	88.1	10.0	2.8
5.	Denmark	4 695	84.5	11.8	4.2
6.	Poland	4 631	67.1	0.8	1.2
7.	Czech Republic	4 472	78.2	12.5	5.9
8.	Spain	3 300	91.7	3.5	1.5
9.	Belgium	2 078	96.8	3.3	1.0
10.	Sweden	1 665	82.0	5.5	2.3
11.	Austria	1 525	98.4	6.8	2.3
12.	Ireland	1 500	71.8	11.5	6.0
13.	Slovakia	1 400	53.4	7.4	3.6
14.	Hungary	440	32.5	1.7	1.0
15.	Latvia	300	88.2	0.7	0.8
Total EU – 25		112 762	90.4	5.7	2.8

Source: Own study based on: [Hambloch Ch., Menth H., Stelzer M. 2005. ZMP – Marktbilanz. Kartoffeln 2005. Zentrale Markt- und Preisberichtstelle GmbH, Bonn, p. 168].
Źródło: Opracowanie własne na podstawie [Hambloch Ch., Menth H., Stelzer M. 2005. ZMP – Marktbilanz. Kartoffeln 2005. Zentrale Markt- und Preisberichtstelle GmbH, Bonn, 168 s.].

export), the Czech Republic (12%) and France and Great Britain (about 10%) and Germany (5.9%) (Table 1). Among other European countries Poland has one of the lowest share indicators and high dynamics of a decrease in the area of potato seed plantations. The decrease of the area of potato seed plantations in all the EU countries (except for France and the Netherlands) results mainly from a decrease in the overall area of potato crops.

Potato seed production in Poland in the past twenty years has decreased ten times [Zimnoch-Guzowska, Chotkowski 2006]. Potatoes are plants in the case of which the tempo of a fall in the production of qualified seed material was the highest in 1989–2006 (Table 2). Years 1996, 2002 and 2006 were an exception as there was an increase in the area of potato seed production in comparison with the previous year (in 1996 an increase of over 50%, in 2002 of 1.7%, and in 2006 of 15%) [Dzwonkowski et al. 2007]. The major reason for the increase in the area of potato seed production was the higher prices of potatoes in the market. The share of qualified seed potatoes in the use made of the seed potatoes in total was on a very low level, about 5%, in total. The share of qualified plantations, on the other hand, in the overall area of potato crops in Poland decreased from 4% in 1986–1989 to 0.9% in 2006. When drawing the characteristics of the most important tendencies in the seed potato sector, one has to pay attention to the average low size of seed plantations, which in 1991 was 0.99 ha and in 2006 increased only to reach 2.01 ha (whereas in the Netherlands it was almost 18 ha).

The decrease of the area of seed potato reproduction is accompanied by its gradual movement to counties in the northern part of Poland, especially to Pomerania (25.8% of the total land area in 2005) and west-Pomerania (17.0%). These regions have more favourable climatic and environmental conditions which are more suitable for seed potato crops. The share of foreign varieties in the seed area has systematically grown and its pace has accelerated in particular after 2000 [Chotkowski, Wróbel 2006]. The expansion of foreign varieties results from the growing scale of processing in companies which deal with processed potato into crisps and chips, as well as the pushing aside of the Polish varieties of potato in the part of the market of potatoes for consumption which is enhanced by intensive and effective marketing.

SUPPLY BARRIERS IN THE DEVELOPMENT OF SEED MARKET

Because of its unique character, it is the supply conditions which play an important role in overcoming crisis in the seed market. Thanks to them even in the years of good situation on the market the reproduction or the exchange of qualified seed potatoes do not increase as the producers of seed potatoes find it difficult to supply adequately large amounts of seeds. The following are the most important barriers which hamper the increase of supply of qualified seeds:

– Phytosanitary conditions. Difficulties arising from the practical use of legal regulations on phytosanitary safety are considered to be the most important factors which hamper the growth of supply for qualified seed potatoes [Chotkowski 2006]. Fighting against the threat to seed plantations by means of bacterial ring rot of potato caused by (Clavibacter michiganensis ssp. sepedonicus) (Spieckermann and Kotthoff 1914) (Cms) and the risk related to the danger of quarantine diseases are also considered to

Table 2. Changes in qualified plantations area measured in thousands of hectares and their share (%) in crops in total in 1998–2006
Tabela 2. Zmiany w powierzchni kwalifikowanych plantacji (w tys. ha) oraz ich udział w uprawach ogółem w latach 1998–2006 (%)

Crop	1988–1990		1991–1993	1994–1996	1997–1999	2000–2002	2003–2005	2006		
	in thousands ha	share %	in thousands ha	in thousands ha	in thousands ha	in thousands ha	in thousands ha	in thousands ha	share %	dynamics (9:2)
1	2	3	4	5	6	7	8	9	10	11
Cereals in total	257.5	3.6	118.3	133.9	170.1	104.4	59.2	44.6	0.6	0.17
– Winter wheat	61.4	3.8	38.9	35.1	53.2	32.9	18.6	13.6	0.8	0.22
– Spring wheat	28.7	4.4	15.0	16.1	25.0	13.1	6.0	4.2	1.0	0.15
– Winter barley	9.8	6.0	3.5	5.1	3.2	3.0	1.6	1.9	1.0	0.19
– Spring barley	43.5	4.2	20.8	28.0	33.3	20.8	12.0	10.4	1.2	0.23
– Rye	41.3	1.8	16.1	18.2	25.3	10.1	5.8	3.5	0.3	0.08
– Oat	39.3	4.9	12.3	15.1	12.5	9.3	4.2	4.0	1.0	0.10
– Winter triticale	32.3	5.0	10.3	13.8	16.9	11.3	7.8	5.7	0.6	0.18
– Maize	2.3	0.6	2.1	1.4	0.8	1.5	2.1	2.5	0.8	1.09
Potatoes	65.9	3.5	26.3	10.2	9.3	6.9	5.6	5.4	0.8	0.08
Sugar beet	2.2	0.5	1.8	1.7	0.8	0.07	0.04	0.02	0.02	0.01
Winter rape	5.9	1.2	3.9	3.3	1.9	1.4	1.4	0.6	0.1	0.10
Pulse	90.0	19.4	38.2	16.1	13.3	6.4	3.8	3.7	4.3	0.04
Papilionaceus	18.7	2.3	4.7	3.1	2.5	1.5	0.7	1.5	0.4	0.08
Grasses	40.5	–	17.4	10.5	11.8	8.6	8.1	17.1	–	0.42
Crops in total	483.9	3.3	212.7	180.2	210.5	130.8	81.1	75.9	0.7	0.17

Source: Own study based on [Oleksiak T. 2007. Rynek nasion. [in:] Zalewski at al.: Rynek środków produkcji i usług dla rolnictwa. Stan i perspektywy. Analizy rynkowe, nr 31. IERIGŻ-PIB, ARR, MRiRW, Warszawa, 30–35].
Źródło: Opracowanie własne na podstawie [Oleksiak T. 2007. Rynek nasion. [In:] Zalewski at al.: Rynek środków produkcji i usług dla rolnictwa. Stan i perspektywy. Analizy rynkowe, nr 31. IERIGŻ-PIB, ARR, MRiRW, Warszawa, 30–35].

be the major problem. Apart from financial losses and the overcoming of the difficulties connected with the control and research, one can talk here about a "fear barrier". The role of the state politics is to establish compensation systems for farmers and seed manufacturers because of the presence of quarantine diseases, and to make sure that obligatory examinations do not hamper the development of potato business. The change of the functioning of phytosnitary services, following the EU model, seems to be necessary. Instead of being exclusively a policeman, it should become an advisor for producers. The decrease of risk of disqualification and degradation of plantations because of the threat of virus diseases favours the usage of the right production technology and the selection of varieties according to a given region's threat of infection [Turska, Chotkowski 2007].

– High costs of seed potato production and profitability problem. As it follows from calculations by Plant Breeding and Acclimatization Institute at the Bonin Research Center, the profitability of seed potato production in given years was mostly positive. However, in the face of high costs, environmental and economic risk and recently increased costs, i.e. those related to the PIORiN (Main Inspectorate of Plant Health and Seed Inspection) control, the prospect of profitability is unsatisfactory. The negative impact of this barrier of increase of qualified seed potato supply will decrease the higher the level of market prices for seed potato sale.
– Short life cycle of varieties and shortage of popular varieties of seed potatoes in particular. The Netherlands, France and Great Britain's share in the production of the leading varieties in seed industry usually amounts to 10–15% and has remained so for many years. In Poland a sudden regress in the seed production of potato varie-

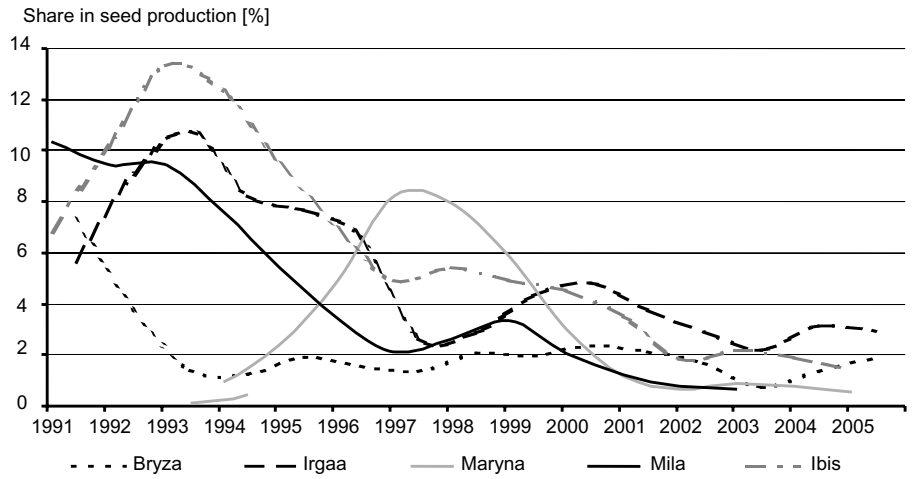

Fig. 1. Life cycle of mid-early and mid-late varieties for consumption according to the share in seed production in 1991–2005

Rys. 1. Cykl życia średniowczesnych oraz średniopóźnych odmian konsumpcyjnych, względem udziału w produkcji nasiennej w latach 1991–2005

Source: [Chotkowski, Wróbel 2006].

Źródło: [Chotkowski, Wróbel 2006].

ties appreciated by the producers and consumers alike is very common [Chotkowski, Wróbel 2006]. On the example of varieties of potatoes for consumption grown for late harvest, such relapse is presented by Figure 1. Changeability of the structure of varieties and its dispersion lowers the economic effectiveness of seed production and the market position of domestic varieties. From the length of the life cycle's point of view, the chase for new varieties, which is characteristic for the domestic market, is highly unfavourable. Too short a life cycle of the varieties also results from market instability, dominance of free-market trade instead of contracts between farmers and the government as well as a relatively high market tolerance to the prevailing sale of potatoes for consumption which are of low quality parameters. In their seed politics, seed breeding companies should strive for the concentration of variety structure as well as to acquire the longest possible variety life cycle.

FACTORS OF DEVEVELOPMENT OF DEMAND MARKET FOR SEED POTATOES

Low profitability of agriculture, including potato production. In a situation of low level of income and profitability of agricultural production in an average farm, farmers tend to limit the costs, including the purchase of qualified seeds. The EU integration and the inclusion of Polish farmers into Common Agricultural Politics have not brought any significant improvement in this respect. Until 2005 a relative stability of real prices of free-market potatoes for consumption in the potato production was observed. Certain possibilities of a price increase and effectiveness exist only in case of sale of stored potatoes, the sale of potatoes grown in conditions of reduced application of agricultural chemicals, and cooperation of farmers in a form of marketing groups.

Low level of potato trade production. As it follows from the IHAR Bonin Research Center analyses [Rembeza 2003], the optimal frequency of seed potato exchange (with some unwillingness to risk which is connected with the investment to purchase seed potatoes on the part of the farmers) on market potato plantations (processed potatoes and for consumption) is every 4–5 years. However, in case of the production of potatoes for the farmers' own use it is profitable to exchange seed potatoes every twenty years. The level of market production decidedly influences the demand for seed potatoes. This is confirmed by the ratio of seed production to the size of market production, which in Poland is slightly lower than in Germany (Table 1). Chances to increase the market production of potatoes in Poland are mainly associated with an increase in processing potatoes into alimentary products and an increase in export (Table 3).

According to research carried out in 2004 in seed manufacturing industries, it is the strict phytosanitary regulations, including the fear of examinations for bacterial ring rot that hamper potato export [Chotkowski 2006]. Despite difficulties, one has to strive for an increase of the drastically low limit of starch production in Poland which was imposed on it during accession to the European Union. Possibly potatoes can be included into the programme of biofuel usage.

Fluctuations of situation in potato market. The demand for seed potatoes drastically falls in years of high potato harvest which results in difficulties to sell and low free market

Table 3. Elements of potato market development in Poland
Tabela 3. Czynniki rozwoju rynku ziemniaka w Polsce

	Factors concerning the increase of market production and outlets of potatoes
1.	Development of potato processing – conditions which favor new investments
2.	Liquidation of barriers for export development
3.	Development of ecological and integrated production
4.	Aiming at an expansion of limits in starch production which were imposed on Poland
5.	Inclusion of potato alcohol into the program of biofuel usage
6.	Increase in potato consumption, including the very early ones
7.	Development of market for pork produced with the use of cereals and potatoes

Source: Own analysis.
Źródło: Analiza własna.

prices of potatoes for consumption. An increased extent of contract of potatoes for consumption with clearly defined prices of sale would diminish the scale of price fluctuations and the level of market situation.

Unsatisfactory quality of seed potatoes available on the market. The emphasis on the improvement of seed potato quality as well as the availability of valuable varieties constitute the most important instrument of exerting pressure of seed producers on the market [Chotkowski 2007]. The improvement of seed potato quality has a positive impact on the effectiveness of their exchange in farms [Rembeza 2003]. The increase of profitability of seed potato exchange will stimulate the supply for qualified seed material.

Concentration of production almost exclusively on the domestic market. Because of the market expansion strategy, globalization of the market and the diversification of economic risk, all big seed producers redirect a part of their activity to foreign markets. Seed producers in Poland limit their sale almost exclusively to domestic market [Chotkowski 2007]. Additional opportunities to export seed potatoes would make it easier for the seed producers to take the risk connected with the increase of reproduction area in case of more favourable supply conditions on the domestic market (like for instance in 2005/2006) [Barański 2006]. The concern of seed producers with export of seed potato would improve the quality of seed potatoes since foreign markets are more demanding.

The liquidation of budget donations for the breeding and exchange of seed potatoes. Until recently, i.e. prior to EU integration, the funds for creative and conservation breeding, including a discount for the purchase of seed potatoes constituted the basic instrument of enhancing the supply. At present the Polska Izba Nasienna (Polish Seed Office) has introduced some funding for farmers for the purchase of up to 100 kg of qualified material. Seed-breeding companies have to pay for the costs of breeding work by means of more effective licence fees, the increase of reproduction scale and the sale of their own varieties and possibly a growth in selective material price. As a result of the act on the legal protection of varieties there is a possibility to obtain fees as one plants materials from one's own crops in farms. However, this is unlikely to affect the income of the stock farmers.

Low cost and little effectiveness of marketing activity. Seed breeding companies have until recently given too little money and employed too few staff for their activity connected

with the conquer of new markets and the launching of new contacts with receivers of seed potatoes. Apart from the workings of the so-called transaction market (the quality and adjustment of the available varieties to the clients' demands, promotion, making sure that the offer and materials reach all the potential receivers of seed potatoes) the modern concept of marketing assumes the launching and maintaining constant cooperation with purchasers [Chotkowski 2007]. Among the activities of the so called partner marketing one can distinguish (apart from the deliverance of high quality products as well as kind and effective service) such elements of cooperation as visits on farms connected with technological and market counselling, training courses, deliverance of publications, phone or the Internet contact, informal meetings.

PRICE TENDENCIES

The prices of seed potatoes in the past fifteen years have showed a greater dynamics of increase than market prices of potatoes for consumption (Table 4). However, the changeability in seed potato prices is greater that that of market potatoes as well as the changeability of prices of seed material of other crops [Rembeza 2003]. Potato seed production can be counted as a high risk activity. Additionally, the directions in changeability of prices cannot be foreseen because they depend on weather conditions.

Table 4. Changes in seed potato prices in comparison with potato for consumption and industrial processing potato prices in 1991–2006, PLN for 100 kg (current prices)
Tabela 4. Zmiany w cenach sadzeniaków w porównaniu z ziemniakami na cele konsumpcyjne i przemysłowe w latach 1991–2006, w zł/100 kg (ceny bieżące)

Direction of potato usage	1991–1993	1994–1996	1997–1999	2000–2002	2003–2006	Dynamics 2003–2006/1991–1993 1991–1993 = 100
Seed potatoes – purchase prices	11.8	36.8	26.8	50.7	55.1	467
– sale prices	13.9	43.0	41.0	51.0	88.8	638
Potatoes for consumption – late harvest – purchase prices	8.0	23.3	28.0	33.8	36.9	461
– free market prices	11.0	25.3	30.5	35.6	56.1	510
– retail prices	21.4	44.5	65.7	68.3	91.0	425
Processed potatoes (starch) – purchase prices	5.6	12.9	13.5	19.2	18.4	329

Source: My own analysis based on the data from GUS (Main Statistical Office).
Źródło: Analiza własna na podstawie danych GUS.

As it follows from the regression equation presented below, the prices of seed potatoes are shaped mainly by the prices of potatoes for consumption in a given year and partly by seed potato prices from the previous year. The increase in prices of potatoes for consumption by 1% causes an increase in seed potato prices by 0.93%.

$$P_s = -1.07 + 0.93 \log P_{con} + 0.42 \log P_{st-1}$$

where: P_s = actual prices of seed potatoes (2002 prices = 100)
P_{con} = actual prices of potatoes for consumption (market)
P_{st-1} = seed potatoes prices of the previous year
$R^2 = 0.87$; DW = 2.14

On the other hand, potatoes for consumption prices are shaped by the level of potato harvest in a given year. An increase of harvest by 1% causes a decrease in prices of potatoes for consumption by almost 1.7%. Real prices of potatoes for consumption in 1990–2004 were shaped on a relatively stable level (the negative tendency is irrelevant). In 2005–2006 as a result of poor potato harvest, market prices of potatoes for consumption grew to 60.5–92.9 PLN per 100 kg. The improvement of prosperity makes favourable perspectives for the development of seed potato and market potato production. However, there are no signs to imply that the above tendencies will remain constant on the market in the years to follow.

$$P_{con} = 7.9 - 1.69 \log Q - 0.017 \log t$$

where: Q = total amount of potato harvest
T = developmental tendency of prices of potatoes for consumption
$R^2 = 0.68$; DW = 1.80

In relation to western European countries there are incorrect relations of seed potato prices in Poland from the producers' and sellers' point of view. The relations of prices of seed potatoes to those of potatoes for consumption in Poland were shaped on the level 1.5–1.7: 1 and they are much lower than in western European countries, where they were 2.5–3.0:1. The intention to reduce costs and sale prices is one of the major aims of the marketing strategy on the global market. However, in Poland qualified seed potato prices ought to be increased to cover the costs of their quality improvement and to increase the profitability of their reproduction. The increase of seed potato prices may thus cause a supply increase provided that their quality improves significantly [Barański 2006].

SUMMARY

The reconstruction of seed production of crop plants, including seed potatoes preconditions the development of plant production for the market and increases its competitiveness in the trade. In light of the analysis that was carried out, the main role in the process of seed market development is played by demand factors. The foreseeable increase in market production of potatoes provides a chance for an increase in the exchange of seed potatoes. The prediction, which is presented in Table 5, assumes an increase in production for the market up to 4.7 tons.

One may expect that the branch of potato trade will receive a greater than so far help and support in the development from the government and organizations which are active in this sector. The negative approach of the companies, politicians and administrators to the perspectives of business development connected with potatoes has to be changed

Table 5. Assessed needs for seed production in Poland in comparison with potato crops with various usage directions in 2005 and 2010

Tabela 5. Oszacowane zapotrzebowanie na produkcję nasienną w Polsce w porównaniu z uprawami ziemniaka na różne przeznaczenie w latach 2005 i 2010

Usage direction	Condition in 2005			Forecasting fo 2010		
	t*/tonnes	yield, t/ha	t* ha	t*/tonnes	yield, t/ha	t* ha
Production for maket in total	3660	–	218	4700	–	240
– for consumption	1820	25.0	120	1900	30.0	115
– processed for starch and alcohol	830	25.0	35	1200	30.0	40
– processed for food products	980	30.0	60	1300	35.0	65
– Export	30	25.0	3	300	30.0	20
For farms usage in total	3495	15.0	357	2640	17.0	271
– farmer families usage in total	2490	15,0	300	2300	17.0	225
– feeding stuff (without refuse)	1005	15.0	57	340	17.0	43
Seed production demand in total	285	10.0	13	235	15.0	12
– Seed potatoes for market production demands (exchange every 4 years)	110	12.0	10	150	15.0	10
– qualified seed potatoes on no-market production demands (exchange every 20 years)	35	12.0	3	60	15.0	2
Area of potato crops in total, ha, t*.	–	–	588	–	–	520

*t – in thousands /w tysiącach

Source: My own analysis on the base of GUS [Dzwonkowski et al. 2007] and research of IHAR [Chotkowski 2006].

Źródło: Własna analiza na podstawie danych GUS [Dzwonkowski et al. 2007] oraz badań IHAR [Chotkowski 2006].

[Chotkowski 2006]. When assuming that the frequency of seed potato exchange is every four years on average, the demand for qualified seed potatoes may be estimated to be 150.000 t. An output of 15 t per 1 ha implies the necessity to grow seeds on the area of 10.000 ha (Table 5). The remaining 2.000–3.000 ha should provide potatoes for export and exchange (every 20 years) on plantations which are meant to produce crops for self--usage supply. The next argument for the increase of demand for qualified seed potatoes is the foreseeable increase in the professional potato production and quality demands of the market [Beukema, Van der Zaag 1989]. The key role in the restructuring of the seed market is to be played by seed-breeding companies as well as the state's politics. The liquidation of financial help for biological progress may paradoxically lead to a situation in which the owners of varieties, by improving the seed potato quality on the market and the development of cooperation with purchasers and implementation of other system solutions, will order the market which will result in an increase of the indicator of seed potato exchange in Poland [Barański 2006]. One may expect that the seed-breeding companies instead of creative breeding will concentrate on developing the production of their own seed varieties, the organization of reproduction and the development of sales

market, whereas seed producing companies will implement the rules of marketing to a greater extent. The development of seed market will be inhibited in a situation when some supply barriers are eliminated. In the past few years the role of factors of this kind has decidedly increased. Phytosanitary conditions are considered to be the most important barrier which inhibits the growth of supply for qualified seed potatoes. Aid from the state government seems to be necessary here. An increase of supply prices of seeds as well as the lengthening of life cycle of the leading potato varieties would have a positive impact on limiting the supply barriers. To sum up one may claim that the seed market of potatoes is likely to restore and develop. However, the elimination of some barriers is necessary. The factors for the seed market development which are presented in this paper are also applicable to cereals and other crops.

REFERENCES

Barański B., 2006: Kto trzyma klucz do przełamania kryzysu w nasiennictwie ziemniaka w Polsce. Ziemn. Pol. 3, 11–14.

Beukema H.P., Van der Zaag D.E., 1990: Introduction to potato production. Pudoc, Wageningen, p. 208.

Chotkowski J., 2007: Marketingowe podstawy rozwoju rynku nasion rolniczych. Monogr. i Rozpr. Nauk. IHAR, nr 26, IHAR Radzików, p. 134.

Chotkowski J., 2006: Perspektywy produkcji ziemniaków w Polsce w opiniach przedsiębiorstw nasiennych. Biul. IHAR 242, 153–160.

Chotkowski J., Wróbel S., 2006: Tendencje w strukturze odmianowej produkcji sadzeniaków ziemniaka w Polsce w latach 1991–2005. Zesz. Probl. Post. Nauk Rol. 511, 459–468.

Dzwonkowski W., Szczepaniak I., Rosiak E., Chotkowski J., Rembeza J., Bochińska E., 2007: Rynek ziemniaka. Stan i perspektywy. Analizy rynkowe 31. IERiGŻ-PIB, ARR, MRiRW, Warszawa, p. 27.

Rembeza J., 2003: Ryzyko a ekonomiczna efektywność nakładów w produkcji rolniczej na przykładzie ziemniaka. Post. Nauk Rol. 1, 67–77.

Turska E., Chotkowski J., 2002: Potato seed production – current problems and development trends. Ann. Warsaw Agric. Univ. – SGGW, Agriculture 43, 33–38.

Woś A., 2003: Polityka rolniczo-środowiskowa i nowe szanse rolnictwa. IERiGŻ, Warszawa, p. 98.

Zimnoch-Guzowska E., Chotkowski J., 2006: Potato sector in Poland: From breeding to production. [In:] Potato developments in a changing Europe. Ed. N.V. Haase, A.J. Haverkort. Wageningen Academic Publishers, Wageningen, 215–225.

CZYNNIKI RYNKOWE W ROZWOJU ROLNICZEJ PRODUKCJI NASIENNEJ (NA PRZYKŁADZIE ZIEMNIAKA)

Streszczenie. Ziemniaki należą do takich gatunków, które doświadczyły największego spadku produkcji nasiennej w latach 1989–2006. Istnieje potrzeba uzasadnienia ekonomicznego odwrócenia malejącej tendencji w produkcji nasiennej i dwu-, trzykrotnego zwiększenia zużycia kwalifikowanych sadzeniaków w rolnictwie. W świetle przeprowadzonej analizy okazuje się, że głównymi barierami w odnowie produkcji nasiennej są takie czynniki popytowe, jak: rozmiar produkcji i dochodowość w rolnictwie, jakość sadzeniaków oraz poziom marketingu. Należy ograniczyć bariery, które hamują wzrost zaopatrzenia (dochodowość produkcji sadzeniaka, wymagania fitosanitarne, krótki cykl życia odmian uprawnych).

W latach 2005–2006 nastąpił znaczący wzrost w cenach rynkowych sadzeniaków. Wyeliminowanie większości barier rozwoju rynku, omawianych w artykule, jest niezbędne do odbudowania produkcji nasiennej.

Słowa kluczowe: produkcja nasienna, ziemniak, rynek, szanse i bariery rozwoju

Accepted for print – Zaakceptowano do druku 30.03.2008