STOWARZYSZENIE EKONOMISTÓW ROLNICTWA I AGROBIZNESU
Roczniki Naukowe ● tom XII ● zeszyt 6

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IMPORTANCE OF SPECIAL BRANCHES IN POLISH AGRICULTURAL AND FOOD ECONOMY

ZNACZENIE DZIAŁÓW SPECJALNYCH W ROLNICTWIE I GOSPODARCE ŻYWNOŚCIOWEJ

Key words: special sectors of agricultural production, cultivation under shield, poultry farming
Słowa kluczowe: działy specjalne produkcji rolniczej, uprawy pod osłonami, fermy drobiarskie

Abstract. Agriculture plays still very essential role in Poland's economic development. In result of dynamic changes its share in creation of PKB (Gross National Product) was subject to lowering from 12.1% level in 1989 to 4.2% in the year 2006. Processes that proceed in economy are forcing continuous adaptation to market conditions. This process concerns also Polish agriculture, which, following more and more effective utilization of possessed resources, tends towards application of modern technology solutions. The technology progress plays enormous part, particularly in the most capital-intensive agricultural sectors such as special branches.

Introduction

Agricultural activity is based on production of plant or animal products in non-processed condition, from own cultivations, breeding or rearing including production of sowable, nursery, breeding as well as reproduction materials, production of vegetables in field and under shield, production of decorative plants, cultivable mushrooms, fruit culture production, animal, poultry and insects pedigree material breeding and production, animal production of industrial & farm type as well as fish breeding. Special branches of agricultural production are among others: cultivations in glasshouses and heated foil tunnels as well as *in vitro* plant growing. Specific character of special branches is first of all based on differing from traditional agriculture taxation method and method of income fixing. Agricultural production of special branches is, as a rule, commodity production, directed towards intensive utilization of area in the case of cultivations under shield or a place of specific animals breeding or farming, such as fur animals or more traditional, such as poultry.

The publication includes presents classifications of special agricultural-production branches, sizes and types of selected special branches as well as estimated income standards, taxation method, agricultural production values and sizes within the framework of selected special branches, prices alterations tendencies as well as importance in international exchange. The most essential branches of agricultural economy were subject to analysis. Time range of analysis covers the years 2000-2007.

Concept and scope of special branches

Special branches of agricultural production have been initially treated as separate form of agricultural activity conducting. In time course they started to be perceived as important national economy element that increases agriculture development level and makes raw material base for industry. More yieldable production from special branches was subject to softer taxation rules than traditional agricultural production forms.

As special branches of agricultural production the Act of Parliament defines cultivations in glass houses and heated foil tunnels, mushrooms and mycelium cultivations, in vitro plants cultivations, farm breeding and rearing of cropped and egg laying poultry fouls, poultry fouls hatcheries, fur and laboratory animals breeding and rearing, earthworms breeding, entomophagous breeding, silk-worms breeding, apiary operation as well as breeding and rearing other animals outside the farmstead [Ustawa *o podatku*... 1991].

Incomes on the score of conducting specialistic agricultural production are subject to income tax on special agricultural-production branches. The legislator determined types and sizes of special agricultural-production branches as well as estimated annual-income standards. Natural persons are tax objects. The amount of income reached from conducting special agricultural-production branches in tax year makes the taxation base. Income can be determined in twofold way.

– on the grounds of receipts and expenditure books; the taxation base is made by real income constituting the difference between gained receipts and born costs of their acquiring corrected by animals flock size change in tax year indicated on the grounds of kept account book, taking into account real receipts and expenditures.
– applying estimated standards of annual receipts; the taxation base is made by estimated receipts determined on the grounds of estimated receipt standards from defined cultivations area or animal production units. Taxation basis amount is gained multiplying appropriate estimated receipt standard by number of cultivations units area or animal production units.

Characteristic of glasshouse products market in Poland

Poland belongs to the main vegetables producers in EU – in the year 2007 it came to be fourth in tomatoes production (taking position after Italy, Spain and Greece), first in carrot production and third in onion production. Majority of domestic vegetables production includes onion, carrot, cabbage as well as cucumbers– that make more than production half.

Table 1. Size and dynamics of growing under shield vegetables area and crops in Poland in the years 2003-2007

Specification	Years				
	2003	2004	2005	2006	2007
Growing area (in thousands ha)	5441	5467	5429	5484	5325
Dynamics of growing area alterations, preceding year = 100	100.0	100.5	99.3	101.0	97.1
Crops (in thousands tons)	671.2	673.8	673	648.4	772.9
Dynamics of crops alterations preceding year = 100	100.0	100.39	99.88	96.34	119.20

Source: Rocznik Statystyczny... 2003-2007.

Area of vegetables cultivation from under shields in the years 2003-2007 was subject to fluctuations according to GUS (Main Statistical Office) (Tab. 1). The largest cultivations area was recorded in 2006. This situation was not however convergent with the size of obtained-in-this-period crops; the highest were in 2007. Size of crops from under shields is not so strongly connected with atmospheric conditions as it occurs in the case of ground cultivations. It is dependent to the highest grade on decisions of entities that run production. Cultivations area is, first of all, dependent on sales possibilities as well as on price conditions.

High differences in intensity of glass house and tunnel garden production can be observed. High tunnels, particularly non-heated with many plants production are dominating in Poland. 20.2 thousands of farmsteads (Fig. 1) were engaged in production of vegetables under shields in 2007 and average growing area per farmstead was about 0.26 ha (in Holland – 2.7 ha). Area of new facilities in Poland is however usually higher than old ones.

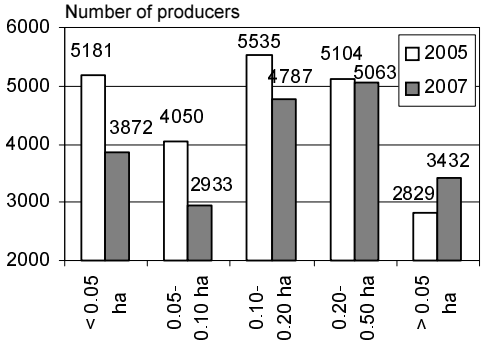

Figure 1. Number of producers of vegetables under shield according to growing area in the years 2005 and 2007
Source: see tab. 1.

Farmsteads that grow plants under glass are distributed within the whole Poland's area in various concentration, especially around large municipal communities. It should be however pointed out that approximately 2/3 of the whole glasshouse and tunnel cultivation is concentrated in 6 administration provinces of Central Poland. The highest number of farmsteads and the largest growing area of vegetables under shields is cumulated around Warsaw what results from historical aspects, accessibility to sales market, good infrastructure and water resources.

Glasshouses areas in Poland were considerable before 1990 both in case of vegetables growing and floriculture. Glasshouse investments were lowered in a period of Poland's economic

transformation which caused decrease of growing-under-glass area. Although Polish agriculture as a whole survived this difficult period eliminating weaker market participants, it can be stated that growing under glass became more effective. Production in preceding years was rather of low efficiency, whilst currently it is of high quality in modern glasshouses.

Tomatoes market in Poland

Poland is perceived as dynamically developing producer of glasshouse vegetables who offers tomatoes of more and more better quality non-departing from European level. Polish producers start to be real competitors for Dutch ones.

Share of tomatoes in Poland's vegetables production structure in 2007 ruled at the level of 13% (25% in EU) –tomatoes crops dominate in the structure of vegetables under shield growing and production area in Poland (about 57%) [Rynek mięsa 2008, Rynek drobiu... 2008, Handel zagraniczny... 2008]. This production grows systematically similarly as share in general tomatoes production which was 63% in 2008. Annual growth rate of tomatoes production from under shields ruled at 7% level in years 1996-2008 while that of ground tomatoes – 0.7%.

In respect of tomatoes susceptibility to transport and in respect of short storage time, their share in international turnover is relatively low. In comparison to corn turnover quantity, where 11 % of production is subject to international turnover, 3 % level of trade turnover share in fresh vegetables production is very small.

Size of tomatoes production is determined by situation on international market. Production rise of tomatoes production under shields in Poland (3% average annually in years 2003-2008) was mainly stimulated by high export rise dynamics [Nosecka 2007]. Annual rise rate reached 15 % level in years 2003-2008. Poland is net tomatoes importer. 80% of total import takes place in the period of January – April as well as November – December, i.e. outside the production season in Poland. Size of turnover share in production is gradually growing. Already 18% of production was assigned for export in 2007 (Fig. 2).

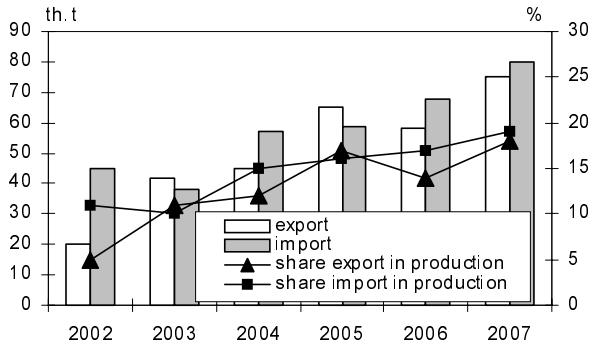

Figure 2. Size and share of tomatoes export and import in Poland in years of 2002-2007
Source: own calculations on the basis of Rynek Rolny...2008.

Spain, Holland and Germany are the largest tomatoes suppliers to Poland. Season of tomatoes crops in Spain lasts in November – May months [Sobiecki 2007]. Germany, in spite of the fact that they are net tomatoes importer themselves, conduct re-export of Spanish tomatoes to Poland. Poland becomes more and more important player in Union's tomatoes export (next to Spain, Holland, Belgium and France), although its share in deliveries to EU is about 2%.

Analysis of the period after 1996 allows to state that production size keeps rising trend. Small fluctuation occurred in the period of 1998-2001. Tomatoes production rise occurred after 2001 jointly with simultaneous rise of production from under shield share (Fig. 3).

Average ground tomatoes price was about 1 PLN in years of 2003-2008, whilst price of tomatoes from under shields was 3.10 PLN. The most advantageous relation occurred in 2003 when ground tomatoes price was five times lower than that from under shields.

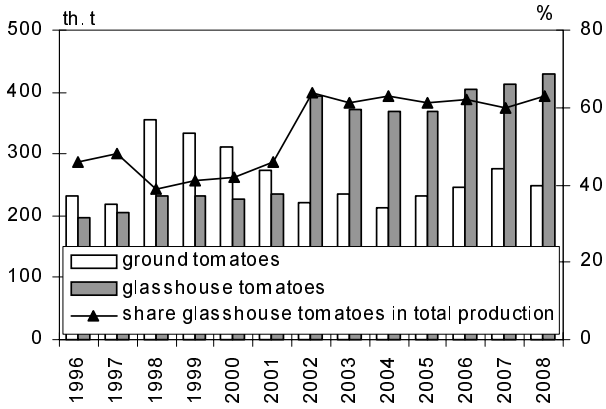

Figure 3. Production of tomatoes in Poland
Source: see tab. 1.

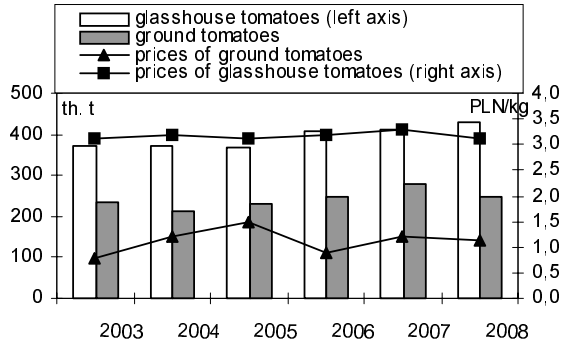

Figure 4. Size of crops and prices levels of tomatoes in years of 2003-2008
Source: see fig. 1.

Starting from 2005, size of tomatoes from under shields was subject to continuous growth, its rise and drop is however noticed (Fig. 4).

Consumption of fresh tomatoes in Poland was high already in the period of access to EU, comparable with consumption in considerable richer member states. It can explain the fact, that in spite of rise of Polish society incomes in years of 2004-2008, tomatoes consumption dynamics rise was considerable lower than assumed.

Consumption of fresh tomatoes per capita oscillates within the limits of 7-8 kg annually (data of Eurostat), and their share in vegetables consumption totally rises systematically. Rise of Poles wealth is accompanied with drop of consumption of cabbage, beetroots, carrot that were traditionally dominating in northern and middle-eastern inhabitants diet, whilst tomatoes and cucumbers consumption rises.

Dependence between PKB (gross national product) *per capita* level and tomatoes consumption size in particular countries is not noted in EU (the highest tomatoes consumption is in Mediterranean countries (about 31-57 kg annually). Tomatoes demand has been rising since a few years (Fig. 5).

High quality, packed, full-bunch of cherry type and cocktail tomatoes are more and more popular in developed countries. High importance is attached to unitary packages – sales with producer's logo. Loosely sold tomatoes are still the most popular on rising markets, such as Poland, more and more interest is however also attached to full-bunch and cocktail tomatoes. Effect of production consolidation is also observed. Number of producers is lowering, whilst average area of growing from under shields per farmstead is growing.

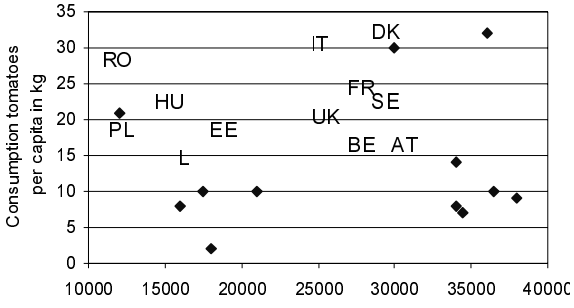

Figure 5. Dependence between PKB [gross national product] *per capita* in USD in selected EU countries (2007) and gross fresh-tomatoes consumption
Source: Agricultural Statistic... 2008.

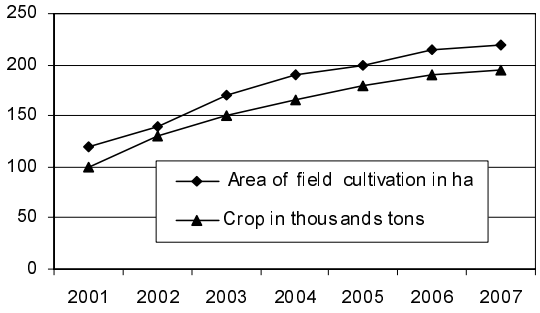

Figure 6. Area of field mushrooms cultivation and crop size in years 2001-2007
Source: see fig. 1.

Field mushrooms production grows in Poland in spite of general tendency on Union's mushrooms market, its growth dynamics however distinctly slows down. In 2006 Poland came to be second in EU (after Holland), generating about 195 thousand tons (Holland 230 thousand tons), the distance between Poland and Holland has been however getting smaller since a few years. Both area and crops size has been subject to increase in the period of 2001-2007 (Fig. 6). Field mushrooms market development prospective is strongly related to work costs level since there are no possibilities to replace human work with machinery in respect of work type to be performed.

According to Dutch Agricultural Economy Institute (LEI-DLO), the basic factors that determine market situation in mushrooms sector are production costs and prices, level of technical and teleinformatic infrastructure, geographical position as well as climatic and geographic conditions. Field mushrooms production in Poland is concentrated in Wielkopolska, Podlasie and Mazowsze. Field mushrooms assigned for direct consump-

tion dominate in the structure of these mushrooms. Their growing (crop) is particularly labour absorbing. Field mushrooms production for processing (about 30% production in general), whose collection can be mechanised is still of relatively slight importance. Field mushrooms production, in spite of concentration, is still very dissipated. According to Eurostat data mushrooms growing in Poland was conducted in 3,050 facilities in 2005 while e.g. in Holland – in 300.

Domestic consumption and foreign trade of field mushrooms in Poland and their development prospective

Field mushrooms consumption in Poland is about half lower than in EU-15 countries. It is ruling at 1.2-1.8 kg level annually per inhabitant and indicates small rising tendencies [Handel zagraniczny... 2008]. Polish market absorbability is evaluated for 70 thousand tons whilst annual production in years 2004-2007 was ruling at the level of 60 thousand tons. Balance of foreign field-mushrooms trade is positive (Tab. 2).

Table 2. Field mushrooms foreign-trade turnover in Poland

Years	Export mushrooms				Import mushrooms			
	fresh		processed		fresh		processed	
	th. t	mln EUR	th. t	mln EUR	th. t	mln EUR	th. t	mln EUR
2004	87,4	101,1	b.d.	b.d.	0,7	0,1	b.d.	b.d.
2005	94,6	121,6	39,2	44,8	0,4	0,3	0,5	1,3
2006	96,2	135,9	36,3	53,2	0,2	0,3	0,9	2,3
2007	126,6	176,5	48,4	65,5	0,4	0,8	0,6	3,7
2008	100	145	50	67	0,5	1	1	4

Source: own calculations on the basis of Handel zagraniczny...2008.

Export of field mushrooms from Poland, both fresh and processed, is dynamically developing (About 30% and 19% growth in 2004-2007 years respectively). Fresh field mushrooms export constituted about 50 % of their production whilst it was already 60% in 2007. Analogous indexes ruled at the level of about 20% and 24% in the case of processed mushrooms.

The biggest buyers of Polish mushrooms are Union's countries, mainly Austria, Great Britain, Germany, Sweden, France and Italy. In 2007 76% fresh field mushrooms export was directed to EU-15 countries markets (mainly to Germany and Holland – 48 thousand tons) and about 10% – onto the markets of other EU countries. In the case of preserves, decrease of mushrooms-in-brine export is observed whilst export of tinned and frozen field mushrooms considerably grows. Share of EU countries as processed (excluding frozen) field mushrooms buyers was over 50 % in 2007. The main importers of frozen field mushrooms from Poland in 2007 were East European countries (Russia and Ukraine).

Distinct seasonality is observed in field mushrooms export. The lowest export volume is observed in summer months (July-August), what results from limited domestic field-mushrooms supply and the highest – in March and April.

Poultry market

Production of poultry meat was systematically rising in Poland in years 2000-2008 [Rynek mięsa 2008, Rynek drobiu... 2008]. Its rate increased double-times in 2008 in comparison with 2000 (Tab. 3). Last years meat production was rising in Poland more quickly than in EU countries. Poultry meat production has been rising particularly dynamically. Annual-average production rate was 11.6% in the period under investigation whilst it was 0.6 % in EU-15 in comparison with 1.7% annual pork growth and 1% annual beef growth. Progressive export rise presented positive tendency.

Table 3. Poultry meat balance in Poland

Years	Poultry meat balance [th. t]				
	production	import	supply	export	consumption in country
2000	584	17	601	46	555
2001	695	26	721	45	676
2002	794	31	825	58	767
2003	860	24	884	108	776
2004	916	89	1005	132	873
2005	1016	82	1098	186	912
2006	1037	89	1126	215	911
2007	1115	97	1212	262	950
2008	1207	65	1272	299	973

Source: see. fig. 1.

Over 210 thousands farms were engaged in boiler chickens breeding in 2007 according to GUS (Main Statistical Office) data. Chickens breeding is dissipated, average herd included 370 chickens in this period. Boilers are most popular in farms engaged in chickens breeding.

Domestic production made the main consumption satisfying source. Export is of very high importance in poultry branch. Self-suffi-

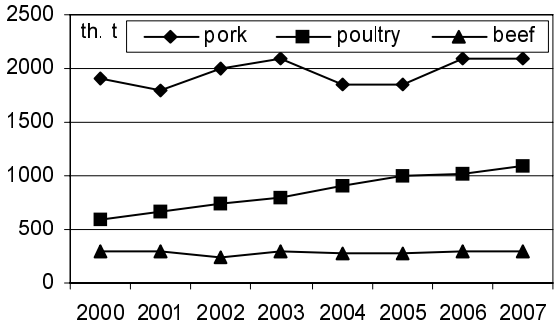

Figure 7. Slaughter animals production volume in Poland in years 2000-2007
Source: own calculations on the basis of Agricultural statistic... 2008

ciency index, i.e. consumption satisfy with domestic production, ruled at 117.3% level in 2008. It means that 17% produced poultry meat should be assigned for inner markets to provide market balance. Pork quantity almost satisfied domestic demand in 2008.

Figure 7 illustrates meat production ruling in Poland in years 2000-2007. Poultry production accepted rising trend while pork production was subject to cyclic fluctuations and beef production ruled at stable level. Total production of three main meat sorts was 3.6 million tons in 2007. Total meat production ruled at 100 kg meat per person level (slightly over 80 kg in 1996-2000), pork – 55 kg, poultry – 30 kg and beef – 10 kg per person. Poultry breeding is characterised with relatively short production cycle which permits quick reaction to market changes as well as lowers risk related to market conditions. High feed consumption effectiveness is also of high importance.

Poultry meat prices in Poland

Prices in market economy conditions are subject to various impact. It results in long-term changes trends, deviations from trend of cyclic character and finally short-term perturbations. Pork, beef and poultry meat were subject to different tendencies in years 1996-2007 (Fig. 8).

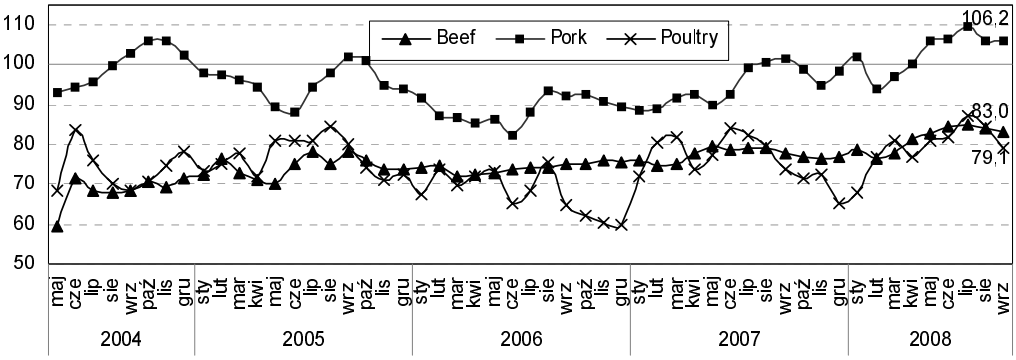

Figure 8. Relation of beef, pork and poultry in Poland to EU prices (Average EU price = 100)
Source: see fig. 7.

Poultry meat consumption in Poland

GUS data show meat consumption rise in years 1990-2007 with high fluctuations in particular years and structure changes. Poultry consumption mainly raised and beef consumption fell down. Poultry consumption was 24 kg in terms per 1 inhabitant in 2007 and it was almost three times higher than in 1989. Red meat consumption was lowered from 54.1 to 46.5 kg, i.e. by 14% in this period. Beef consumption reduction from 16.3 to 4.5 kg was decisive in this respect. Pork consumption was stable, fluctuations were from 35.7 to 42.2 kg depending on swine's cycle.

Meat consumption rose up to 76 kg in years 1997-2007. Ruling prices relations and consumers' food preferences stimulated particularly demand for poultry meat and, less so for pork. Considerable, because about two times, rise of poultry consumption was noted (from 12.5 to 24 kg) at about 18% pork consumption growth (from 35.7 to 42 kg). Significant rise of poultry consumption was noted in years 2001-2002, i.e. in the period of population income situation worsening and escalation of unemployment. Additional factor favouring poultry demand rise was decrease of beef demand resulting from consumers fear against BS effect. Poultry consumption rise in years 2004-2005 compensated to high extent for beef consumption resulting from prices growth after Poland's entry to European

Union. Slowing down factor for poultry consumption were buyers fears of birds influenza effect.

Share of red meat in total meat and pluck & giblets consumption was 61% in 2007 against 78.7% in 1989. Pork share was 55.3% and was similar to that noted on the turn of 1989/1990 years. Beef share decreased four times from 23.8% in 1989 to 5.9% in 2007, with poultry share rise from 12.2 to 31.6%. Pork kept its dominating position at the meat market. Beef came to be second till 1994 but poultry came to be second after 1994. Food preferences of buyers as well as prices relations of particular meat types were decisive for such changes.

Foreign trade of poultry meat

Poultry products export increased from about 21 to 215 thousand tons in years 1990-2006. Export share increased from about 5 to 20% , in spite of consumption rise. Poultry meat dominated in the export goods structure. Its annual average export was almost 20 thousand tons in the first half of ninetieth, including about 90% share of duck and goose-meat. Gradual development of farm chicken broilers production as well as turkey broilers made possible poultry meat export growth up to about 40 thousand tons in the 2nd half and up to 123 thousand tons in years 2001-2006. Exported poultry meat goods structure was changed. First of all its sharing of chicken as well as turkeys meat was risen from about 10% in the first half of ninetieth to over 80% in years 2004-2007.

EU-15 made the main poultry meat outlet in ninetieth, including Germany which were buying goose-meat under tariff quotas as well as France to which duck-meat was exported. Birds influenza epidemic in EU in 2001 caused high drop of poultry production. Chicken meat sales possibilities increased in the states of EU-15. Owing to differences of poultry prices in Poland and EU-15 its export was profitable even outside valid tariff quotas. Poultry meat export was 101 thousand tons in 2003 and was double higher than in 2002. Growth tendencies of its export to member states were still remaining after Poland's access to EU. Poultry meat export rose from 115 up to 200 thousand tons in years 2004-2006 and sales receipts from 242 to 420 million euro.

UE 25 participation in gained incomes rose from 88% to 93%. Germany remained still the highest outlet market but new poultry products buyers emerged. Great Britain, Czech Republic, Holland, Slovakia as well as Asian countries.

Changes of poultry goods export structure occurred in the current decade. Still about 90% incomes originated from poultry meat export but poultry preserves and slaughter poultry export increased. Poultry preserves were not more than 0.7 to 2.4 thousand tons annually but it increased up to 7-14 thousand tons annually in years 2001-2006. Important export-dynamic-imparting factor was increase of UE-15 consumers' confidence in relation to poultry meat having been subjected to thermal treatment.

Meat was dominating in poultry products imported in 1990-2006 years whose volume was subject to high fluctuations, resulting from [Serema-Bulge 2007]:

- customs preferences granted to Poland by USA. Poland imported American frozen thighs with lower customs rate; poultry products import was 45 thousand tons at the average in years 1990-1998 and was by 21 thousand tons higher than export; domestic poultry production was increasing at the same time and maintaining high import was disturbing demand and supply balance,
- poultry import limitations at preference principles only to the amounts of minimal access to the market under which it could have been realised at lower prices and customs rates; fall down of poultry products import occurred in years 1999-2003 to 23 thousand tons at the average that was of 37 thousand tons lower than export,
- removing customs in trade with UE-25, which made possible purchase in member states cheep poultry meat elements to be used in processing; poultry products import increased again to 86 thousand tons annually in years 2004-2006, but it was 91 thousand tons lower than export.

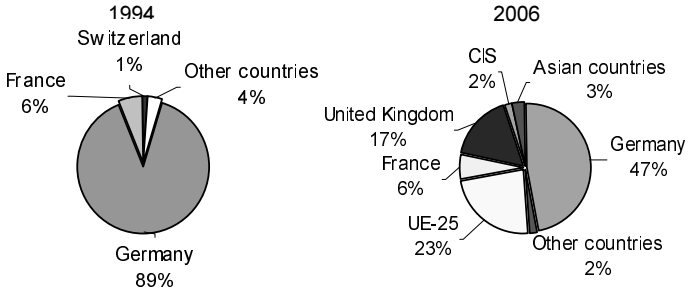

Figure 9. Geographic structure of poultry meat export
Source: own calculations on the basis of Rynek mięsa 2008.

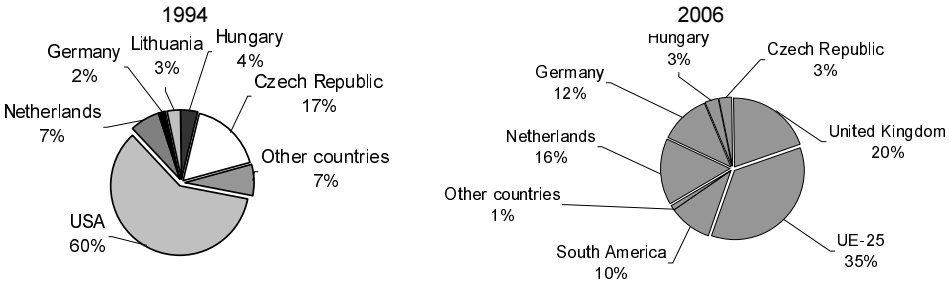

Figure 10. Geographic structure of poultry meat import
Source: see fig. 9.

Geographic structure of import was changed. United States lost position of the largest poultry exporter on Polish market. Great Britain, Italy, Holland and Germany replaced them. South America (Brazil, Argentina) countries emerged on the list of states from which Poland imported poultry in result of granting these countries import quotas by EU.

Poland, importing almost 90 thousand tons annually in years 2004-2007, was relatively small poultry products importer in relation to other member states. For instant Great Britain imported 392 thousand tons in these years and Spain 111 thousand tons poultry annually.

Conclusions

1. In respect of very favouring conditions, both macro and microeconomic, Poland has a chance of dynamic development of agricultural, classified as special branches, production.
2. High interest of relatively cheep Polish products on foreign markets stimulates development of subsequent branches of agricultural and food sector.
3. Main sources of Polish agricultural producers predominance is production of lower total costs.
4. Basing on own production means in a form of feed as well as on cheaper manpower makes possible price competitiveness.
5. Poland is a worldwide leader in field mushrooms production as well as respected-in – Europe poultry and tomatoes producer. Producers of these articles improve and expand production process technologies aiming to keep pace with domestic as well as foreign competition.

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Summary

W pracy przedstawiono analizę działów specjalnych produkcji role i ich owpływna rozwój rolnictwa i obszarów wiejskich w Polsce. Stwierdzono, że następuje ich ciągłe dostosowywanie do zmiennej gospodarki rynkowej.

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