STOWARZYSZENIE EKONOMISTÓW ROLNICTWA I AGROBIZNESU
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CHANGES IN LAND USE IN CEE COUNTRIES DURING THE LAST DECADE

ZMIANY SPOSOBU UŻYTKOWANIE ZIEMI W KRAJACH EUROPY CENTRALNEJ I WSCHODNIEJ W OSTATNIM DZIESIĘCIOLECIU

Keywords: trends in arable land use, role of cereals, overproduction
Słowa kluczowe:trendy w użytkowaniu ziemi rolniczej, znaczenie zbóż, nadwyżka produkcyjna

Abstract. The trends in arable land use and production structure in the enlarged European Union – in contrary to the former expectations – contribute to the increasing share of cereal production. It is also enhanced by the subsidy system which was introduced and has been in use since the integration into the EU. The research uses the data of EUROSTAT database in order to examine the total agricultural area, arable land area, area of cereals and yield averages by single countries. The permanent decrease of agricultural and plough land areas can be seen in the EU land use from 1999 to 2009. It was proved in the research that the area of winter wheat, parallel with the permanent growth of average yield, has increased in most of the member states, which is an unhealthy tendency in regards to the production structure because it further adds to the overproduction of cereals.

Introduction

One of the priorities of sustainable agriculture is the social control of arable land – the key resource of agriculture – and it is treated as a strategic issue in the European Union. The land use can be examined from different aspects. Out of the two main approaches, one examines the arable land areas from the aspects of production structure. The changes in the structure within a certain interval – not independently, of course, from the supply and demand as well as the subsequent price conditions – characterize the changes in the trends and intensity of production, too. The other approach examines the arable land use according to the estate structure and here the arable land – as a basic production resource and its value-producing role – receives greater emphasis. In this sense, the land use and its changes are closely related to the price or rent of the land, which also affects the cultivation lines, the production structure and intensity by modifying the competitiveness of production.

The privatization of agricultural land has resulted segmented, direct or indirect small-scale farm structure in most of the new member countries of the EU. The land was given back partly or totally to the owners or inheritors, of the land reforms following the world war. This also meant that significant part of the land is cultivated through farming lease, the segmented land structure reduces the efficiency and the increasing rents further deteriorate the profitability and competitiveness of farming [Csáki, Lerman 1997]. The estate regulations following the privatization are usually not suitable for encouraging the farming estate concentration in order to grow the efficiency in these countries, which – together with the limitation of land ownership – contradicts to the estate policy principles of the European Union. Analysing the land use and estate structure before the integration, Burgerné Gimes [2003] stated that the dominance of cereals was typical even before the integration and the decreasing of fruit and wine growing could be observed in many countries. Since the proportion of sectors which represented higher values, has decreased, the competitiveness of agriculture in the new member states has further declined in international terms [Takács 2008]. In her opinion, the direction of change can be the withdrawal of fields with disadvantageous makings from field crop production, forestation, grassing and extensive livestock grazing on the pastures.

Keszthelyi and Pesti [2008] examined the impact of SPS system on the changes of land use and production structure, as well as on the profitability of production. They have stated that in those countries, where the subsidization has been separated from production since 2005, there was a decline in production following the introduction of SPS system. The decline did not go together with the reduction of producer income, due to the fact that the farmers dropped the loss-making activities and stopped crop production in the non-profitable areas. All this projects a positive impact of subsidy system transformation on the competitiveness of agriculture. In case of Hungary, the authors assume that the introduction of SPS, made in 2008, can have a significant impact on land prices and land rents. Those lands, which are not entitled for subsidies, can have significant value decline, thus reducing the rents, too. Those areas, however, which consist of bigger plots, cultivable economically in one block, where the owners are entitled to subsidies, the land prices and rents are presumed to grow considerably. The separation of national complementary (top up) subsidies from production in 2007 and 2008 has had medium effect on production structure. The beef cattle breeding declined, but no real change could be observed in field crops production. The reason for this was the low subsidy (12 000 HUF) connected with title, while short-term changes in the plantation farming was not predicted. Considerable medium-term changes in production structure and income can be due to the changes in supply and demand, as well as economic conditions.

The land estate policy and land use of Central Eastern European countries was examined by many authors from different approaches Takács-György et al. [2008]. Declared that there is a duality regarding land use and estate structure in the countries of the region. They highlighted that in those countries, where the former large-scale structure shifted towards the segmentation of land estates during the political transition, the level of production declined significantly (average yield decreased) and the production structure was simplified at farm level. The proportion of cereals increased, out of the industrial crops the sugar-beet fields decreased, some crops (e.g. flax) disappeared, and the proportion of fodder growing areas also diminished due to the declining role of animal husbandry (significant drop in ruminant stock). Nevertheless, the considerable differences of land prices within the country (2-2,5-fold differences in Hungary) can modify the direction and intensity [Takács-György et al. 2008]. The Polish land use is dominated by small-scale farms, the number of farms producing for self-sufficiency is high. The land turnover is of low intensity, the average size of contracts is 4 hectares, which does not really enhance land concentration. In 2005, 92.4% of the farms under 5 ha used own land, while 47,9% of farms operating on areas bigger than 50 hectares used their own land [Sadowski 2006].

It is connected with the Hungarian land ownership, land market and land price issues that the land turnover was low after the EU integration, land was offered for sale primarily by farms belonging to the size category below 2 EUME, while the medium size farms were the most eager to buy land. The rates of land leasing in Hungary are significantly above the average of the EU-15 and still have an increasing tendency. A land act encouraging estate concentration is missing [Kapronczai 2006].

The changes of land use is influenced – in addition to the above – by the climate changes in the examined region. In the Carpathian basin it can cause aridification owing to the modified annual distribution of precipitation Fekete-Farkas et al. [2005]. Made model calculations concerning the long-term changes in land use and considering economic factors, too. They have stated that the land use is very vulnerable to the changes of market conditions both in short and long run, and the Central Eastern European countries face great difficulties in regards to climate changes, which can be due to a couple of factors. Among these factors, the segmented estate structure, the capital shortage of producers and the agricultural production structure, which was already very unfavourable at the time of the EU integration [Farkas-Fekete et al. 2005]. It was modeled that the climate change has higher effect on land use than the changes is subsidy system in the EU [Vízvári et al. 2009].

In addition to the above, the land use and production structure is also affected by the changes of subsidy system. The objective of the research was to review the changes of arable land use, production structure and yield – indicating the level of production – in the European Union, in the former and newly integrated member states. I assumed that the formerly observable decline of agricultural and arable land areas continued in the land use, the proportion of cereals in production

structure decreased, and the yield slowly but evenly increased between 1999 and 2008. The reduction of agricultural areas was more considerable in the new member states and there was a difference in yield levels to the advantage of former member states.

Material and Methods

The research used the data of EUROSTAT database for the period from 1999 to 2009. The data were evaluated by single countries and two groups: (1) EU-15 and (2) EU-10, which does not include Cyprus and Malta out of the countries which integrated in 2004, but includes Romania and Bulgaria, which accessed in 2007. The applied data: total area, total agricultural area, arable land, area of cereals, yield averages, etc.

Changes of land use in the countries of the European Union

The total area of EU-27 is 432.5 mln ha, out of which the agricultural area occupies 181.1 mln ha, 41.9% of the total area. The arable land is 110.0 mln ha, it is 25.4% of the total area and 60.7% of the agricultural area (Tab.1).

The changes in the agricultural land use between 1999 and 2008 can be described with a decreasing tendency of different degree. The decline was 7.6‰ in the former member states between 2004 and 2008 (the available data did not allow ten-year comparison). The decline was

Table 1. Agricultural and arable land areas and production structure in the EU (1999-2009)

Countries	Area and changes (1999)				Area proportion and changes (1999-2009) [%]											
	UAA		arable		arable/ UAA		cereals/ arable		root/ arable		industrial /arable		fodder/ arable		fodder/ arable	
	1000 ha															
Austria	3384.3	-	1384.7	0	40.9	+	58.5	0	5.1	-	9.6	++	14.7	++	19.8	++
Belgium	1393.8	-	853.8	0	61.3	0	33.0	++	20.6	- -	4.1	++	34.1	-	20.0	- -
Denmark	2997.5	-	2821.5	-	94.1	-	53.1	+	4.4	- -	5.8	++	24.7	- -	11.6	-
Finland	2201.4	+	2176.6	+	98.9	0	51.8	0	3.1	- -	3.1	++	30.6	++	74.0	++
France	29 793.2	0	18 318.1	+	61.5	+	48.2	0	3.5	- -	13.1	- -	24.2	- -	27.6	- -
Germany	17 151.6	0	11 821.5	0	68.9	+	56.1	0	6.9	- -	12.4	- -	14.5	++		
Greece	3918.9	0	2805.8	- -	71.6	- -	45.0	+	2.7	- -	18.6	+	10.8	++	19.5	++
Ireland	4418.4	-	1076.4	0	24.4	+	26.9	+	5.9	- -	0.2	++	1.3	++		
Italy	15 793.7	- -	8553.1	- -	54.2	-	46.2	++	4.3	- -	6.4	- -	26.9	0	23.3	+
Luxembourg	127.4	0	61.6	-	48.4	-	44.6	++	1.6	- -	6.7	++	43.3	- -	31.4	+
Netherlands	1982.9	-	1007.1	+	50.8	+	18.9	+	29.8	- -	2.0	- -	33.3	++	9.5	+
Portugal	3916.5	-	1739.2	- -	44.4	- -	32.7	- -	4.0	-	3.0	- -	22.4	++	75.5	0
Spain	25 942.2	- -	13 463.4	- -	51.9	++	48.9	++	2.2	- -	8.9	0	8.5	- -	13.8	++
Sweden	3055.4	+	2680.6	0	87.7	-	43.0	- -	3.5	- -	4.1	++	36.6	++		
United Kingdom	16 760.8	- -	4495.0	++	32.7	-	72.2	- -	6.1	++	10.1	++	30.1	- -	34.9	++
Bulgaria	5678.6	- -	3493.6	- -	61.5	-	55.4	- -	1.6	- -	23.0	++	6.0	- -	33.2	0
Czech Republic	4282.5	- -	3107.2	- -	72.6	0	51.2	++	4.5	- -	15.5	++	23.6	- -	34.1	++
Estonia	1001.1	- -	860.5	- -	86.0	0	37.3	++	4.0	- -	2.9	++	50.1	- -		
Hungary	6186.0	-	4167.6	0	67.4	+	58.0	+	2.9	- -	15.3	++	9.0	- -	19.8	++
Latvia	2470.0	- -	1840.5	- -	74.5	++	22.6	++	7.5	++	0.6	++	21.5	- -	45.8	++
Lithuania	3495.7	- -	2936.4	- -	84.0	-	34.5	++	6.8	- -	3.2	++	35.3	- -	31.9	++
Poland	18 222.3	- -	14 134.2	- -	77.6	-	61.6	++	12.6	- -	4.3	++	5.9	++		
Romania	14 781.3	-	9329.5	-	63.1	0	57.5	-	4.1	- -	13.6	++	12.0	- -	27.1	+
Slovakia	2443.6	- -	1492.9	-	61.1	++	51.9	+	4.5	- -	15.7	++	22.3	- -		
Slovenia	514.5	-	171.2	+	34.3	++	53.2	0	11.5	- -	2.3	++	25.5	++	57.1	+

Key to signs: the pace of average annual relative change is: ++ higher than 10‰, + between 2‰ and 10‰, 0 between 2‰ and 10‰ and -2‰, - and -2‰, -10‰, - - higher than -10‰.
Source: [epp.eurostat.ec.euorpa.eu].

12.1‰ in the new member states during ten years. The pace of decline was higher in the former member states. Out of the former member countries, the drastic reduction significantly slowed down in the Netherlands (1.8‰) and France (1.4‰), while the strongly decreasing tendency continued in Italy (15.5‰) and Germany (10.0‰). The new member states could be characterized with the decline of agricultural areas in the examined period. The degree of decline was 26.2‰ in Latvia, 17.2‰ in the Czech Republic, 14.3‰ in Poland, 10.2‰ in Bulgaria and 6.5‰ in Hungary.

Examining the arable land cultivation sector, the same general decline can be seen here, too. The arable land decreased by 4.3‰ in the EU-15, while the degree of decrease was greater (5.4‰) in the new member states. The greatest reduction was in Poland (15.3‰). Out of former member states, Spain had a very high, 8.3‰ decline. In Hungary, the arable land cultivation sector was higher by 7.7‰ in 2008 compared to the value in 1996.

Production structure

Analysing the proportion of cereals in arable land, it can be pointed out that the share of cereals was lower (54.03%) within the arable land in the former member states than in the newly accessed countries (61.16%). Within the examined period, however, there was a growth in both country groups, the degree of growth was higher in the new member states.

There was a significant decline in case of root crops in the newly integrated countries, while the proportion of fodder crops increased in both groups.

Table 2. Rate of area of cereals in arable land and changes (1999-2009)

Countries	Arable land [1000 ha]	Rate of area of cereals in arable land (1999-2009) [%]				Slope of change	Correlation
		min	max	means	SD		
Austria	1 376.8	56.4	61.5	59.19	1.6095	0.094	0.215
Belgium	843.9	33.0	43.0	37.84	3.2014	0.810	0.928
Denmark	2 512.4	53.1	61.7	59.76	3.0772	0.289	0.295
Finland	2 222.8	51.0	55.4	53.27	1.4593	0.065	0.160
France	18 595.9	42.7	52.8	49.17	3.1379	0.067	0.076
Germany	11 860.9	55.3	59.7	57.86	1.5039	-0.104	-0.245
Greece	2 572.4	45.0	49.7	47.14	1.7894	0.370	0.570
Ireland	1 139.6	23.8	28.5	25.68	1.5673	0.077	0.164
Italy	7 992.6	46.2	51.9	48.67	2.0351	0.559	0.899
Luxembourg	61.9	42.1	50.4	46.72	2.5834	0.549	0.798
Netherlands	1 048.3	18.9	23.5	21.43	1.5722	0.072	0.162
Portugal	1 410.6	24.4	32.7	28.00	2.8297	-0.660	-0.833
Spain	12 424.4	48.6	75.7	52.57	9.3558	1.311	0.556
Sweden	2 645.4	36.4	46.5	41.14	3.3758	-0.682	-0.726
United Kingdom	5 125.0	54.5	72.2	62.59	8.0359	-0.853	-0.342
Bulgaria	3 276.4	48.8	64.0	55.34	5.5196	-0.802	-0.486
Czech Republic	2 788.0	51.2	60.2	56.61	3.4787	0.897	0.875
Estonia	641.5	37.3	51.9	46.06	5.4387	1.405	0.890
Hungary	4 510.6	58.0	66.6	62.96	3.0125	0.510	0.578
Latvia	1 044.9	22.6	46.5	41.88	8.2154	1.212	0.529
Lithuania	1 967.5	33.4	58.0	51.10	9.3089	1.634	0.616
Poland	12 860.3	61.6	71.8	66.18	3.7900	1.175	0.977
Romania	9 130.0	56.7	68.9	61.20	4.4966	-0.376	-0.290
Slovakia	1 386.2	51.9	60.4	57.76	2.8461	0.212	0.277
Slovenia	175.4	53.1	60.1	56.53	2.4356	-0.037	-0.053

Source: see tab. 1.

Examining the changes of share from the total arable land areas, it can be stated that in case of EU-15, the share increased by 7.8% to 28.7% in the average of ten years, while in case of EU-10, the share of 1999 was the double of the values of the other group (40.9%) and decreased by 1.6% points by the end of the examined period. The arable land, as basic production factor has higher significance in case of the new member countries, and logically they want ot exploit it as much as possible, thus revaluing the role of land. Similar differences can be observed in regards to the proportion of arable land in the agricultural area. This proportion was 59.5% in the former member states in the average of ten years, while it was 69.6% in the newly accessed countries. The proportion of arable land, however, decreased within the agricultural area in both groups during the examined 10-year period.

Reviewing the changes by member states, the proportion of cereals decreased – out of the former member states – in Germany, in the United Kingdom, as well as in Portugal and Sweden, although these latter two countries are not considered major cereal producers. The proportion of cereals increased in the other former member countries. Out of the newly accessed countries, slight decline could be seen in Bulgaria, Romania and Slovenia, while in Poland and the Baltic States, the growth of rate of cereals surpassed the growth of average of EU-10.

Production structure and yield level changes

The reduction of arable land areas in itself does not refer to the yield of basic field crops produced in the European Union. I examined hereinafter the correlation between the growth of proportion of cereals, within this the winter wheat and the yield changes. It can be stated that the quantity of winter wheat produced in the EU as a whole increased within the examined period. In case of the United Kingdom, there was a decline both in regards to the area of land and the average yield within the examined period. The decline in area proportion was significant in Lithuania and Portugal, while the area increased considerably in Spain, Poland, Estonia and Lithuania. The average yield grew very much in Estonia and Lithuania, thus these two new member states raised their wheat production above their self-sufficiency level. Out of the Baltic States, Latvia and Poland could also increase the average yield, so it could be declared that they became major wheat producers at regional level. In regards to the former member states – compared to the former higher average yield level – the level of production further improved in the Netherlands and Belgium. The increase of average yield did not reach the average of the EU-15 in Germany, while there were not

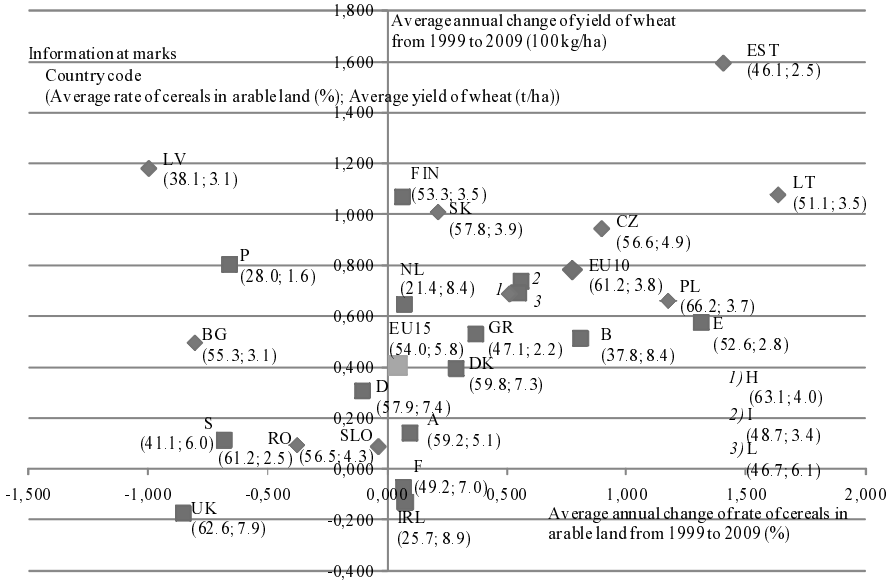

Figure 1. Changes of winter wheat land and average yield in the EU (1999-2008)
Source: see tab. 1.

any considerable improvements of average yield in France (Fig. 1).

The examination has proved the assumption that the rate of cereals, especially winter wheat, in arable land did not decrease compared to the situation before the EU enlargement, but the quantity of cereals produced within the EU increased as a whole, due to the growth of average yield.

Discussion

The examinations pointed out that the reduction of agricultural and arable land has continued. The assumption, however, concerning the decline of rate of cereals within the production structure was not correct. The reasons include the relatively great reduction of fodder producing area within the production structure and, primarily, that element of the subsidy system of the common agricultural policy, which – in spite of the intents – does not help to retain overproduction. If the subsidies are tied to production, the producers will give priority to those crops, for the production of which the technology is well-known, the required resources are available, the level of costs is low, the storage and marketing of the produced crop is of low risk, and ensure appropriate level of income, together with the subsidy.

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Streszczenie

W pracy dokonano analizy zmian sposobu użytkowania ziemi rolniczej w krajch Europy Centralnej i Wschodniej w ostatnich 10 latach (1999-2009). Wskazano na niekorzystną tendencję wzrostu upraw pszenicy ozimej w ogólnej strukturze upraw.

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