

The role of the agriculture in the Southern Great Plain

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Abstract

The examination of the past, the present and the future opportunities of Hungarian agriculture is an endless topic. The designation opportunities could be influenced by several factors worldwide, so that is the situation in the case of Hungary as well. Beside the natural factors (climate, soil, topography, hydrography) the economical endowments (employment, market conditions, supply, demand, material and labour supply, ownership and subsidies) are important too. In my research I try to explore the basic changes in the land use and the importance of agriculture by varied datum and maps of agricultural enterprises in the case of South-Great-Plain region.

Keywords: agriculture, changes, Southern Great Plain region

JEL Classification: O13, O18, Q100

1. Introduction

The Southern Great Plain is the largest region of the country which is located on the southern-southeastern area of Hungary. The constituent counties of the region are Bács-Kiskun, Békés and Csongrád. The most of the region's territory makes up by plain with great scenery and natural value endowments. The elevation of the region doesn't exceed 200 meters nowhere. The area of the region is 18 339 km² that is the 20% of the country's area. The country's population's 14% lives here, the population density is 74 capita/km². The greater part of the Southern Great Plain is suitable for agricultural utilization, 85% of it is cropped and cultivated area. There are three operating National Parks in the region called Körös-Maros National Park, Kiskunsági National Park and Duna-Dráva National Park. The number of the landscape protection areas is 8 and 14% of nature reserve areas are found in the region (Southern Great Plain Operational Programme, 2007).

Considering the number of the settlements (254 which is the lowest value inside a region) and the area of the region (the largest region of the country) the Southern Great Plain has the rarest settlement-network in Hungary. In this kind of settlement-network the presence of differentiating farms is typical. These farms are meaning an important part of the settlements thus the separated development is inconceivable (Review of the Southern Great Plain Regional Development Conception, Proposals of Operational Programme, 2005).

Based on the natural endowments of the region (chernozems - the best capability soils – are the most common soils in the Southern Great Plain areas and the quality of the arable land is the highest in country) it is a traditionally agricultural territory. That statement was confirmed by several analysis, research and study. The datum from previous years of Hungarian Central Statistical Office and the various development conceptions were consolidated the role of the region in the agricultural production. Despite of the decadency of the regional competitiveness indicators between 1990 and 2007 the key part of the agricultural regions have remained (Southern Great Plain Agricultural Structure and Rural Development Programme, 1999).

The rate of the gross value added produced in the agriculture and the aggregated value added does only exceed 10% in the Southern Great Plain by the end of 2000's. More than a quarter of gross value added produced by agriculture is provided by the Southern Great Plain. Bács-Kiskun, Békés and Csongrád counties give the third of the agricultural production of Hungary. If we are looking at the production of agricultural enterprises and individual farmers the region is still on the top. The agriculture's share from the investments is approximately 7% against the national average (3%). It shares in the food production almost 20% and it gives the 40% of meat production. Considering the size of the agricultural areas, the pig-breeding, the fisheries management and hunting the region is on the top of the list. Compared to the other areas of the country, the appearance of fragmented estates are less typical (Central Statistical Office, 2008).

Thanks to the intensive agricultural production the number of the individual farmers (out of the Northern Great Plain) is the highest (40%) in the examined region. 30% of agricultural enterprises are operating in the Southern Great Plain. In the case of enterprises the number of those who employ less than 10 people is the lowest while the number of those who employ more than 250 people is the highest (based on Central Statistical Office data, 2010).

Although the number of the livestock farming and plant breeding enterprises were decreased the relation (rate) between the two categories is the most balanced in the Southern Great Plain. Probably this was caused by the decrease of the crop production and the increase of the livestock farming (in 2007 the region was in the top in cattle- and sheep breeding). Almost the half of the vegetable cultivating farms are found in the region. The rate of the market orientated enterprises is 20% and the 40% of farms sell their excess on the market. The technical equipment, mechanization and capacity measurements are show the best results in the country. The region play a key part in fruit cultivation as well. Although the Northern Great Plain has more fruit cultivation areas, the Southern region's production means a higher amount of quantity (Central Statistical Office, 2008).

Meanwhile the average rate of the employed in the agricultural sector is about 3-4% in the Southern Great Plain region this rate is 12%. In addition, the number of the employed women is the highest in the region. Compared to the national average it's a negative fact, that the rate of the population over 60 years is almost 10%. Another regrettable result is the slight number of high-educated employees, the most of the agricultural workers have at most primary education. After the Central-Hungarian region the Southern Great Plain has the largest number of R+D places in relation with agriculture. Within the researches the most typical topics are the plant breeding, horticulture and biotechnology-aimed investigations (Gurzó et al, 1998).

2. Data and Methods

During my research I try collect and apply such datum and methods which will represent the aim of the examination. The first goal was getting to know if the Southern Great Plain managed to retain its key role in agriculture and if so, what segments are significant? In order to define them I elaborated 254 settlements datum from three counties (Bács-Kiskun County 119, Békés County 75 and Csongrád County 60). During the previous data collection I collected settlement-level datum about individual farms and agricultural enterprises as well, but I had to narrow the database. As I mentioned in the introduction, in the Southern Great Plain the presence of individual farmers is more typical than the enterprises. Thus in order to see the other side of the coin I choose datum about enterprises to analyze. Focusing on the traditional land use was another standpoint, therefore I missed out the vegetable and fruit cultivation datum from this research. The short listed database contains the following indicators:

- The number of enterprises engaged in agricultural activities (piece),
- Total area used by enterprises engaged in agricultural activities (m²),
- Plow used by enterprises engaged in agricultural activities (m²),
- Fruit cultivation used by enterprises engaged in agricultural activities (m²),
- Vineyard used by enterprises engaged in agricultural activities (m²),
- Lawn used by enterprises engaged in agricultural activities (m²),
- Forest used by enterprises engaged in agricultural activities (m²),
- Land out of cultivation used by enterprises engaged in agricultural activities (m²),
- area of the settlements (ha).

The datum were available for all of the settlements in the years 2000 and 2010 so I could characterize the Southern Great Plain's agricultural changes. During the selection of the proper method it was important to choose complex methodology with new aspects. Conforming to the database I searched for a formula which could compare the settlements' datum with national datum. The transformation of an old method (Tivadar Bernát and György Enyedi, 1961) gives the bases of the analysis. They applied the following formula in the book called "*Production districts of the Hungarian Agriculture*" to define productivity. As a first step they compare the districts' crop yield to the districts' whole plow area.

$$\frac{m}{t} * \frac{t}{T} = \frac{m}{T}$$

In the formula: m = the districts' crop yield, t = the examined plant's sown area, T = plow area of the district. This rate means the average yield of the district. The next step was to calculate the national average yield (in country level).

$$\frac{t_0}{T_0} * \frac{m_0}{t_0} = \frac{m_0}{T_0}$$

Finally they compare this to rate to each other so they get the productivity coefficient.

$$\frac{m}{T} / \frac{m_0}{T_0} = \frac{m}{m_0} / \frac{T}{T_0}$$

This coefficient shows the district's share from the country's production based on the district's area. So, whether the yield is proportional with the sown area or is it bigger or smaller than it?

The last formula (after some transformation and coordination of the units) is capable to show the national rate of almost any indicators. The transformed and simplified formula get the following notation:

$$\frac{q_{i-p}}{q_0} / \frac{t}{t_0} = r$$

In the formula q_{i-p} means the 8 examined indicators' values by settlements, the q_0 means the same indicators' values in country level. The t is the area of the settlement, t_0 is the area of the country. For example if we typing into the formula the number of enterprises engaged in agricultural activities in Kecskemét, we find out that Kecskemét share from agricultural enterprises compared to the country's average based on the settlement's area and the number of operating agricultural enterprises. The sign of the rate became r from the word *rate*.

I got numbers between 0 and 1 and above 1 as a result. Based on this I created three main categories in every case of indicators. The first is under the country's average ($0 \leq r < 1$), the second is nearby the national average ($r \sim 1$), the third is above the national average ($1 < r$). To illustrate the results I applied maps which were marked (1. table) in the same way in every case of indicators. In order to we could easily separate the levels, the under and nearby categories didn't have a special color.

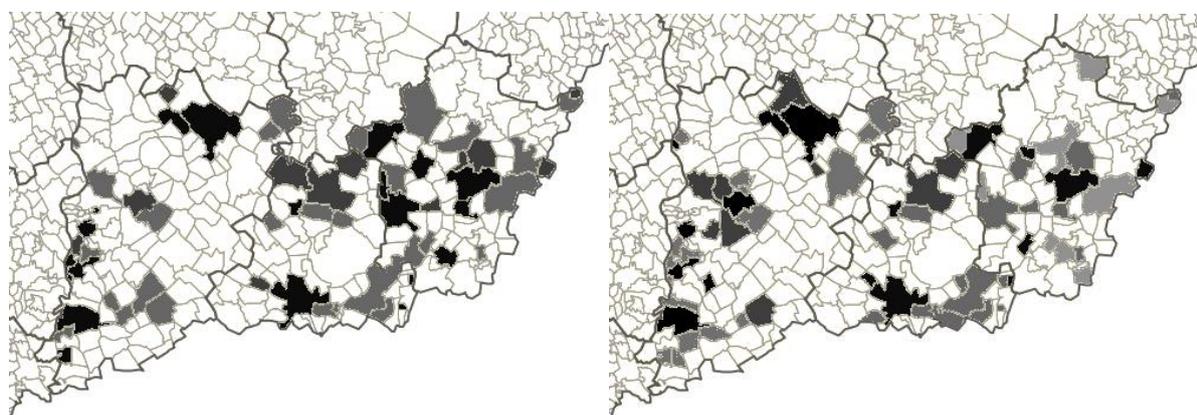
1. table: Color codes of the maps

Below the average	$0 \leq r < 1$	
Nearby the average	$r \sim 1$	
Above the average	$1 < r < 1,49$	
Above the average	$1,5 < r < 1,99$	
Above the average	$2 < r$	

Source: author's own edition, 2015

3. Results and Discussion

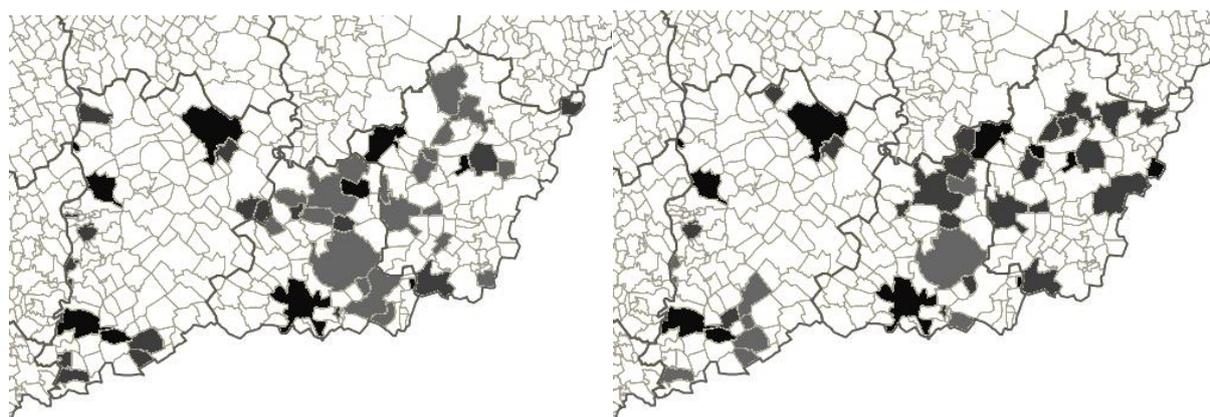
Fig. 1.: The number of enterprises engaged in agricultural activities 2000, 2010



Source: author's own edition, 2015

Figure 1. shows the Southern Great Plain's share from the enterprises engaged in agricultural activities in 2000 and 2010. In 2000 the 18,5% of settlements in Bács-Kiskun county, the 30% of settlements in Békés County and 24% of the settlements in Csongrád county are presenting outstanding values which are above the national average. In 2010 already the 26% of settlements in Bács-Kiskun County had an outstanding indicator meanwhile in Csongrád County this number is 28% and Békés County were stagnated in the past 10 years. The highlighted values in both years typically belonged to bigger cities and their agglomeration (for example Kecskemét, Baja, Szeged, Makó, Békéscsaba, Szentes).

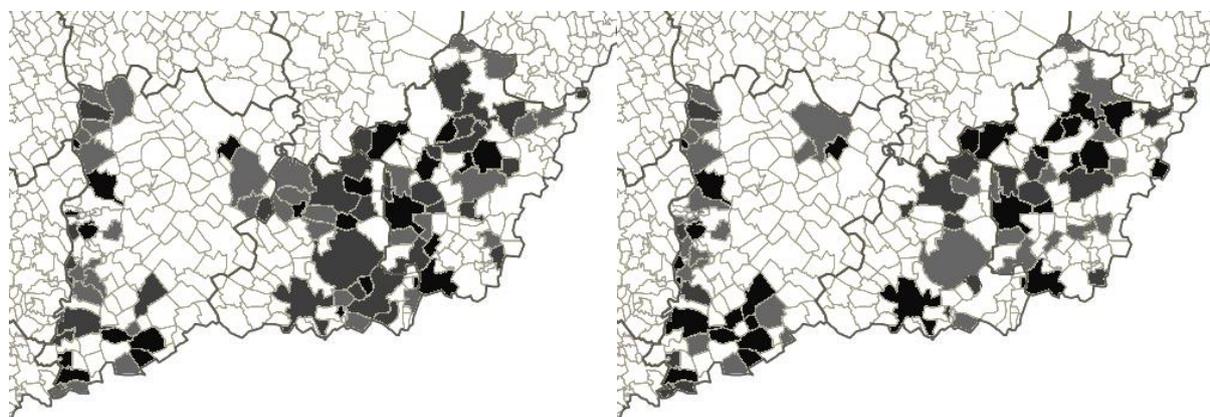
Fig. 2.: Total area used by enterprises engaged in agricultural activities 2000, 2010



Source: author's own edition, 2015

We can see the rate of the total area used by enterprises engaged in agricultural activities on Figure 2. It could be observed that the Southern Great Plain region is in a good situation. It means that in the region the number of the settlements above the average in 2000 reached the 20%. In county level Csongrád County had a 23,4%, Békés County had a 21,4% and Bács-Kiskun County had a 13,45% rate. Similarly to the number of the agricultural enterprises the key role is belongs to bigger cities such Kecskemét, Szeged, Baja and Hódmezővásárhely. The average region-rate was decreased until 17% in 2010 thanks to decadency of Bács-Kiskun and Csongrád counties' values.

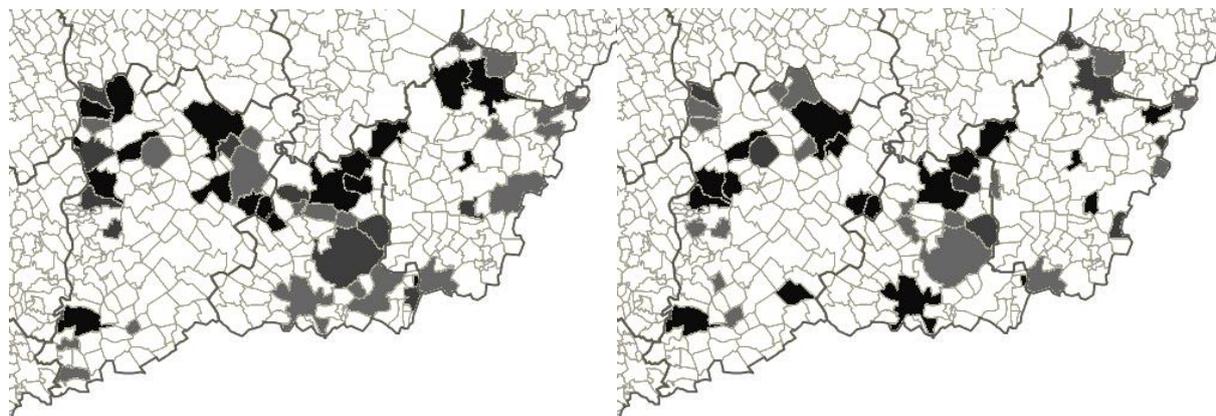
Fig. 3.: Plow area used by enterprises engaged in agricultural activities 2000, 2010



Source: author's own edition, 2015

Figure 3. shows one segment of land use of the agricultural enterprises, the rate of used plow areas. Compared to the two previous figures in the year 2000 the most topping values could be observed in this case. It means almost 27% of the settlements in Bács-Kiskun County, 45% of settlements in Békés County and 35% of settlements in Csongrád County. In this way the regional average approaching 36%. By the year 2010 the regional rate decreased with 2% (34%) but it doesn't mean a radical recession. The increase in Bács-Kiskun County (2%) could not compensate the decrease of Békés (1%) and Csongrád (5%) counties. In the case of plow areas the cities' expansive agglomeration and the riverside of the Danube are also playing a role.

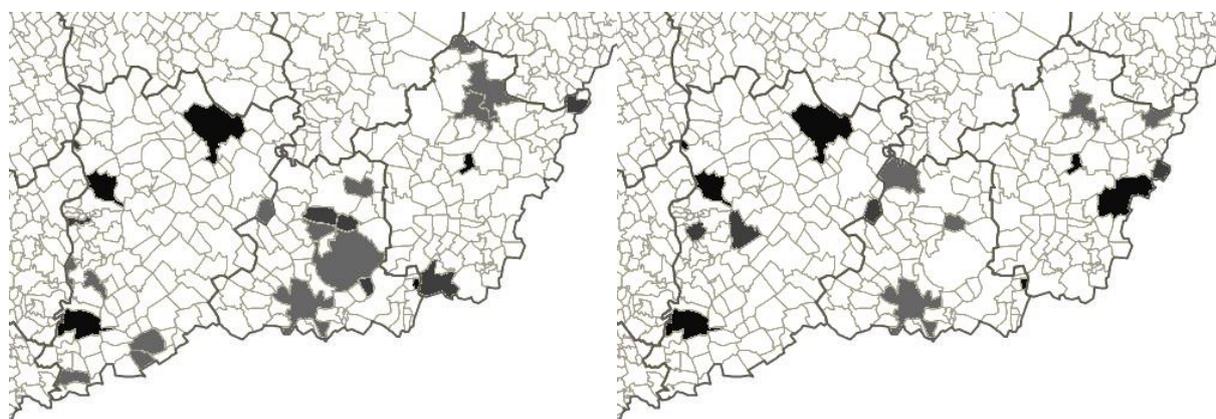
Fig. 4.: Lawn area used by enterprises engaged in agricultural activities 2000, 2010



Source: author's own edition, 2015

We could discover similarity in the rate of used lawn areas by agricultural enterprises and the communicated results so far which we could see on Figure 4. In the segment of lawn areas in 2000 the 20% of the settlements reached the above-average category. Bács-Kiskun County's settlements contributed with 19%, Békés County's settlements gave 17% and Csongrád County's settlements produced 25%. Ten years later the regional average dropped below 17%. Though the values of Bács-Kiskun and Békés counties were just slightly decreased, 10% of Csongrád County's settlements lost their position. The similarity is still stay in the illustration, the bigger cities get the dark color notations.

Fig. 5.: Land out of cultivation used by enterprises engaged in agricultural activities 2000, 2010



Source: author's own edition, 2015

The last map (Figure 5.) shows the rates of land out of cultivation used by enterprises engaged in agricultural activities. I think it was important to illustrate because I wanted to see "decline" of the agriculture of the Southern Great Plain from this point of view (this indicator could show telltale signs). We could see on the figure that the number of the settlements which are belonging to the above-average category is not significant. In 2000 10% of the settlements in the region belonged to the outstanding category and this rate were decreased until 6,4% by 2010. Bács-Kiskun's values decreased with 3,3%, Békés County's settlements contributed with 1,33% and Csongrád County's settlements gave a 6,67% decrease to reach the abovementioned rate.

4. Conclusion

Based on my research results the Southern Great Plain is still a determinative agricultural region, area. It still able to accomplish the same amount of agricultural production described in the introduction. Furthermore it has several settlements which have values above the national average. Because these outstanding values could detected in sectors strongly related with plant breeding and livestock farming (number of enterprises engaged in agricultural activities, plow and lawn areas) it will be rewarding to put more emphasis on the agricultural activity in development documents.

Despite of leading the way in every sector of agriculture, the Southern Great Plain's competitiveness doesn't reach the required values. The previous studies and reports show that relying on the mechanization, the technical equipment, the value added and role of the agriculture in the GDP the sustainable competitiveness of the region could be available. To reach this purpose the experts should recognize the weak points.

The other positive side is that the amount of land out of cultivation is not significant and mostly concentrated nearby the densely populated areas. Probably the population growth, the spreading of the cities and the green field investments of the multinational corporations are the causes of process. In my opinion, the getting out of cultivation doesn't mean such a huge danger like in the other areas of the country, especially if we take into account the endowments of the region. The prices of the lands are the lowest in the Southern Great Plain (maybe because of the distance from the capital and the infrastructural circulation) which could mean a potential hazard, as a result the lands could easily used for non-agricultural purposes.

The predominance of individual agricultural businesses could cause problems in the region. However, the most of the farmers produce for the market or sell their excess, moreover several individuals produce for export, the sales mostly proceed in the inside-region markets. Thereby the value added - which was produced here – couldn't get to further points of the country even if the facilities are available. The instance of the cooperation could be a solution, the question is: how/ what about the short food supply chain?

In the Southern Great Plain the amount of investments is not enough. There are two basic possible solutions to choose. One of these is the investment from abroad which means foreign enterprises in several cases. The other way is to emphasize of the EU supports which will be a complex solution for a while. By the help of EU subsidies the region could develop the technical and infrastructural conditions meanwhile the experts could handle the value added issues.

On the other hand between 2014 and 2020 a new programming period has been started in the EU, the Common Agricultural Policy- related subsidies has changed. For example the young farmers' program which will have a special attention in the next 7 years. In the Southern Great Plain the rate of the population over 60 years is higher than the national average and the support could motivate the young farmers. The positive evaluation of the higher educated young farmers could mean the other side of the motivation. In the latter case it is a great benefit that in the region there are five cities which have university education in agricultural subjects: Szeged, Kecskemét, Szarvas, Gyula and Békéscsaba. If the graduated youngsters won't want to work directly in agriculture (on the fields) they could choose an indirect way, the R+D sector. By working for example in a biotechnological research center the entrants could increase the role of the region in the R+D sector.

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