

# Types of agricultural enterprises in the high production region in Slovakia (sample area of the Nitra district)

## *Typizácia vybraných agrosubjektov vysokoprodukčného regiónu Slovenska (modelové územie okres Nitra)*

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**Abstract:** First part of the paper assesses the physical-geographical locality factors of the agricultural production in the district of Nitra. Agricultural production in a typical high production region has been analysed (structure of the enterprises legal forms, focus of production, number of employees). The second part examines the types of the most important agricultural enterprises according to the selected economic indicators such as economic efficiency, labour productivity and relative employment. These indicators are the best ones to express the economic power of agricultural entities and farming efficiency.

**Key words:** natural land potential, high production region, structure of agricultural enterprises, focus of production, employment structure, types of agricultural enterprises, economic efficiency, labour productivity, relative employment

**Abstrakt:** Príspevok je zameraný v prvej časti na zhodnotenie fyzicko-geografických faktorov pre lokalizáciu agrovýroby v okrese Nitra. Analyzujeme agrovýrobu v typickom vysoko produkčnom regióne Slovenska (sledujeme štruktúru subjektov podľa právnej formy, výrobné zameranie, počet zamestnancov). V druhej časti predstavujeme typizáciu najvýznamnejších agrosubjektov podľa vybraných ekonomických ukazovateľov, ako sú ekonomická výkonnosť, produktivita práce a relatívna zamestnanosť. Uvedené ukazovatele najlepšie vyjadrujú ekonomickú silu agrosubjektov a ich úspešnosť hospodárenia na pôde.

**Kľúčové slová:** prírodný potenciál územia, vysokoprodukčný región, štruktúra agrosubjektov, výrobné zameranie, štruktúra zamestnancov, typizácia agrosubjektov, ekonomická výkonnosť, produktivita práce, relatívna zamestnanosť

The district of Nitra may be considered as a traditional agricultural region of the Slovak Republic. It is situated in the Danubian Lowland where agriculture is the most wide-spread activity. The Northern part of the district consists of the Danubian Hills and the Tríbeč Mountain and the Danubian Flat in the south. Regarding the locality, the district is optimally situated for agricultural development concerning the physical geographical factors, in particular the suitable soil-climatic conditions. The structure of the land fund use are also optimal in terms of agricultural development. In the district Nitra, almost 78.7% of land fund is used as agricultural land. The district is rich in arable land (89.9%). This feature has positively influenced the development of agricultural production. Very fertile soils of the Nitra district are proved

by the average official land price, which is one of the highest prices in Slovakia.

## MATERIAL AND METHODS

At present, agricultural production of the Slovak high production regions is under the research of several experts in the areas of agriculture, economy and geography. Papers about further agricultural and rural development at various regional levels have been important in the field of science and research. The important papers of this character – from the area of geography – are the articles of Spišiak et al. (2005), Némethová (2005), Spišiak and Némethová (2008), Némethová and Spišiak (2008), Věžník and

Štěpánková (2004), Drgoňa et al. (1998). The agricultural-economic research is presented by the papers of Buday (2004), Buchta (2004) and Buchta and Buchta (2009) who examine the problems of agrarian employment or the impacts of the European funds on the agricultural and rural development in Slovakia. The articles of Sojková et al. (2008) and Střeleček et al. (2008) are dedicated to the problems of agricultural companies farming under different production conditions. According to Chrastinová (2008), as up to 1990 and at present, the the chief factors for the differentiated agricultural efficiency are natural conditions, less diversified legal forms of farms, the concentration of agricultural land and, last but not least, the work of the managers, i.e. the organization and business management.

The paper focuses on the analysis and synthesis of the main agricultural companies farming according to the selected indicators in the high production region of Slovakia. The document is based on the territorial research, which was realized in the Nitra district in 2006. The main methods used in the paper are the scientific analysis and synthesis, comparative method and mathematical-statistical methods.

## RESULTS AND DISCUSSION

### The physical-geographical factors for the allocation agricultural production in the Nitra district

The selected sample area, the district of Nitra, is situated on the Danubian Lowland in the Western part of Slovakia. In the district, the warm lowland climate predominates. The typical positive characteristic feature of the district is the amount of annual sunshine hours (2 088). The Nitra district is one of

the warmest regions in Slovakia; consequently, the region is used mainly for agricultural production.. Climate conditions enable to grow all the plants including the thermophilous plants. As regards soil texture, the soils suitable for agricultural production are the loam and sandy loam soils (medium-heavy soils) occupying around 85 % of the district. The haplic luvisols are the most frequent soil types that occur in the North-Eastern and North-Western part of the district. In particular, black soils are wide spread in the South-Western part of the district. In fact, most soils suffer from the water and wind erosion in consequence of the undulated terrain.

### Business structure in agricultural production of the district Nitra

In the district, agricultural production is represented by 52 agricultural enterprises besides individual private farmers (Table 1). Limited liability companies (31 companies) – with the total area of 21 442 ha – predominate among the business companies. The average size of an agricultural enterprise of this type is 682 ha in the selected region.

Cooperatives (17 farms) farm the area of 25 227 ha, i.e. 53% of agricultural land (ag.l.) in the Nitra district (47 580 ha). Cooperative farms also represent the largest average area (1 484 ha). In the district, the smallest area of agricultural land is typical for the joint- stock companies (4 companies); the average farmed area is 228 ha but in total, the farmed area is 911 ha. In 2005, 435 private individual farmers operated in agricultural production. They farmed the agricultural land of 12 316 ha (19.63%), of which 9 860 ha (16.31%) was arable land. The average area of agricultural land per one individual farmer is 28 ha in the Nitra district.

Table 1. Development in size of the structure of agricultural enterprises in the Nitra district, in 1995 and 2005

Legal form	Number of farms		Agricultural land (ha)		Average area (ha)	
	1999	2005	1999	2005	1999	2005
State farms	3	–	–	–	–	–
Private individual farmers	524	435	–	12 316	–	28
Cooperative farms	19	17	30 096	25 227	1 672	1 484
Limited liability companies	21	31	18 849	21 442	839	692
Joint stock companies	7	4	1 329	911	269	228
Total, except individual farmers	50	52	–	–	–	–

Source: Statistical Office of the Slovak Republic, Regional Office Nitra (1999, 2006); own calculations

## Production focus of agricultural enterprises in the Nitra district

Regarding the specialisation of production, agricultural companies with mixed economy (29 enterprises) predominate in the district. This very often is characterises the cooperatives. Another type of activity is growing of cereals and other arable crops (13 enterprises). In particular, limited liability companies are oriented at this type of production. The other types are represented in the minimum share. The district location – both in the Danubian Hills and the Danubian Flat that belongs to the most fertile land and most intensive Slovak areas – have preordained it for the crop production. This is why most enterprises are oriented at plant production or mixed economy with the important position of plant production as well. Agricultural crops dominating in the region are: cereals, oil crops and sugar beet of the technical crops. Fodder crops providing animal production have also a significant position in the plant production. In the Nitra district, animal production focuses on rearing pigs, poultry and cattle for the dairy and meat production. Poultry management, represented by 5 enterprises, has a specific position there.

With regard to the farming specialisation, the enterprises were assessed at the national level (Table 2). Only the farms with 20+ employees were taken into account and evaluated according to the following indicators: the share of enterprises, the share of employees and the share of sales by the production. Orientation. Concerning the indicators, mixed crop-livestock farms, both by the district and national level, registered the highest share. The second place is represented by animal rearing. Other areas of production are of less importance.

## Number of workers in agricultural enterprises of the Nitra district

The number of workers employed in agriculture has recently decreased. The agricultural sector employed 108 900 workers in 2002 and 81 500 workers in 2005, which means a decline by 17 400 persons or in percentage the decline by 25.2% (Table 3). Male workers predominated in the agricultural employment of Slovakia. Educational structure of the workforce has been characterised by the declining share of workers with primary education. In 2005, there were 14.8% of workers with primary education, 50.5% with completed vocational training, 27.7% with completed secondary education and 7.0% with completed university education.

The decline in the number of agricultural workers has resulted in negative changes of the age structure. Comparing the years 2002–2005, the largest decline was recorded in the category of workers aged 30–34 years (the decrease by 51.8%). A more significant increase is to be seen in the group of older workers aged over 60 years. In 2005, the largest number of workers was found in the age category of 50–54 years (23.9%) and their number increased by almost 3 000 on the year-to-year basis.

Cooperative farms (65.2%) and farming business companies (33.4%) held the largest share in agricultural employment regarding organisations with 20+ employees. The rest is represented by other legal forms (Green Report 2006).

Regarding the transformation process, the changes in Slovak agricultural production have influenced the employment structure in agriculture and rural areas. Moreover, the mentioned facts have affected the analysed district. There are 2 492 workers employed

Table 2. Specialization of farms with 20+ employees at the district and national level, in 2005 (%)

Type	Share of					
	farms		employees		sales	
	district	SR	district	SR	district	SR
Growing of cereals and other arable crops	2.9	8.8	4.3	6.7	14.3	7.3
Cultivation of vegetable and horticulture		1.6		1.3		2.2
Growing fruit and nuts		1.4		1.6		1.0
Rearing of animals	11.8	14.4	24.4	14.1	32.2	16.6
<b>Mix crop-livestock farming</b>	<b>79.4</b>	<b>70.1</b>	<b>70.3</b>	<b>73.4</b>	<b>52.8</b>	<b>66.6</b>
Agricultural services	5.9	3.6	1.0	2.9	0.8	6.4
Total	100.0	100.0	100.0	100.0	100.0	100.0

Source: Statistical Office of the Slovak Republic, Regional Office Nitra, 2005, terrain research, own calculations

in agriculture in the Nitra district. In terms of legal forms, most workers work in the cooperative farms – 1 187, in limited liability companies – 68, and in joint- stock companies – 619 (in 2005).

According to the number of workers, the medium-sized enterprises (20–99 employees) are the most numerous. There are 24 enterprises of this type, what means 46.2% of all enterprises in the district (52). Small enterprises (up to 19 employees) are the second numerous group consisting of 20 enterprises (38.5%). Large enterprises (100+ employees) were represented by 15.4% (8 companies).

In the terms of the gender structure, men (63%) predominate over women (37%) in agricultural enter-

prises of the Nitra district. The age structure shows the most workers in the age category over 46 years (52%). Young farmers up to 25 years are rarely employed in agriculture; it is caused by the low interest of this age category owing to low wages (in agriculture, the average monthly wage is still the lowest one in comparison with the rest of economy). Young people consider working in agriculture as unattractive, hard and characteristic by the lack of job opportunities. Considering the slight predominance of older workers as well as other working conditions, the work in agriculture is also suitable for workers with only primary education; around 18% of all workers are only educated on primary level. The number

Table 3. Development of agricultural labours in thousand in Slovakia, in 2002–2005

Employees	2002			2003			2004			2005		
	total	males	females									
<b>Total</b>	108.9	74.1	34.8	99.4	69.9	29.6	86.6	63.1	23.5	81.5	59.0	22.5
<b>Education</b>												
Primary	17.9	8.9	9.0	14.7	8.0	6.7	12.0	6.4	5.6	12.1	7.4	4.7
Vocational	55.1	43.4	11.8	48.0	38.9	9.1	42.5	35.8	6.7	36.7	30.1	6.6
Secondary	4.6	3.6	1.1	3.7	3.0	0.6	1.7	1.5	0.2	1.8	1.1	0.5
Completed vocational	2.7	2.6	0.2	2.6	2.0	0.6	2.5	2.0	0.5	2.6	2.4	0.2
Completed comprehensive	2.3	0.9	1.4	1.9	0.9	1.0	1.5	0.8	0.6	1.7	1.2	0.6
Completed secondary specialized	22.5	12.6	9.9	21.7	11.8	9.9	20.6	12.1	8.4	21.0	12.0	9.0
Higher specialized education	–	–	–	0.3	0.1	0.2	0.2	0.2	–	–	–	–
Tertiary	3.9	2.2	1.6	6.7	5.2	1.5	6.0	4.6	1.4	5.7	5.0	0.8
Without school education	–	–	–	–	–	–	–	–	–	–	–	–
<b>Age</b>												
15–19	0.9	0.7	0.2	0.2	0.1	0.1	0.1	0.1	0.1	–	–	–
20–24	5.5	5.0	0.5	4.6	4.1	0.5	3.4	3.3	0.1	2.8	2.5	0.1
25–29	7.6	6.0	1.7	7.0	5.1	1.9	7.1	5.7	1.5	6.8	5.2	1.6
30–34	14.1	10.0	4.1	10.1	6.5	3.6	7.4	5.7	1.7	6.8	5.4	1.4
35–39	14.7	8.9	5.8	14.8	10.4	4.4	9.5	6.7	2.8	9.9	7.4	2.6
40–44	15.9	10.0	5.9	17.3	11.7	5.6	14.3	9.1	5.2	10.6	7.0	3.6
45–49	20.6	12.6	8.0	19.1	12.6	6.6	18.8	12.5	6.3	15.0	9.6	5.5
50–54	20.1	12.0	8.1	15.7	9.5	6.2	16.1	11.1	5.1	19.0	12.6	6.3
55–59	8.6	8.0	0.6	9.5	8.8	0.6	8.4	7.8	0.6	8.9	7.9	1.0
60–64	0.8	0.7	0.1	0.6	0.5	0.1	1.2	1.1	0.1	1.1	1.1	0.0
65+	0.3	0.3	–	0.6	0.5	0.1	0.3	0.3	0.1	0.7	0.5	0.1

Source: Statistical Office of the Slovak Republic, Slovak Labour Force Sample Survey 2002–2005

of these workers, however, declines year by year and people with secondary education have recently predominated.

The agriculture of Slovakia is characterised by the low number of university-educated workers. These workers usually work in the management of the enterprises and are still in demand. In some agricultural enterprises, the positions of directors, managers, economists, agronomists, etc. are staffed by people with a completed secondary education (especially older people). For this reason, the educational level of agricultural staff must be improved incessantly; in particular, young and tertiary educated experts must be employed in agriculture. There are 9% of tertiary education graduates working in the agricultural enterprises in the district of Nitra, representing a quite high percentage, but the Slovak Agricultural University situated in Nitra may influence the situation.

#### **Types of agricultural enterprises by economic efficiency in the Nitra district**

According to the field research in the selected agricultural region, as is the Nitra district, the types of agricultural enterprises were set with respect to the agricultural area or number of employees. The economic indicators such as economic efficiency, labour productivity and relative employment were selected; as these indicators are the best ones to express farming efficiency of the selected enterprises. The research focused on the farming enterprises only, apart from animal-oriented companies. Agricultural enterprises can be sorted into the following types according to gross agricultural production (GAP) per 100 ha of agricultural land (ag.l.), in million SKK: 1<sup>st</sup> type of enterprise – below-average values (GAP/100 ha ag.l.) – up to SKK 2 000 000, 2<sup>nd</sup> type of enterprise – the average values (GAP/100 ha ag.l.) – SKK 2 000 001 to 3 000 000, 3<sup>rd</sup> type of enterprise – the above-average values (GAP/100 ha ag.l.) – SKK 3 000 001 and more. The average indicator value is SKK was 2 700 000 for all enterprises. The below-average value of GAP/100 ha ag.l. was recorded in 29.4% of enterprises, the average indicator value was recorded in 35.3% of enterprises and the above-average value in 35.3%. Higher values of economic efficiency are achieved by cooperative farms, the average value is SKK 2 900 000. The average value in the limited liability companies is SKK 2 500 000. More enterprises with the average or above-average indicator values are located in the North-Western and Southern part of the district.

#### **Types of agricultural enterprises by labour productivity in the Nitra district**

The decreasing number of workers in agriculture along with the increasing agricultural production have logically resulted into the increasing labour productivity. The labour productivity is expressed as GAP per 1 worker. Then, the agricultural enterprises were sorted into the following types: 1<sup>st</sup> type of enterprises with the below-average values (GAP per 1 worker) – up to SKK 500 000, 2<sup>nd</sup> type of enterprises with the average values (GAP/1 worker) – SKK 500 001 to 1 000 000, 3<sup>rd</sup> type of enterprises with the above-average values (GAP/1 worker) – SKK 1 000 001 and more. The average indicator value is SKK 858 000 for all enterprises. The best values were recorded by the limited liability companies, operating with the average labour productivity of SKK 864 000, and the joint stock companies, with the least enterprises but the highest indicator value (SKK 1 221 000). Cooperative farms are characterised by the lowest average value (SKK 735 000). In the analysed region, 16.2% of enterprises belong to the first type of the indicator, 51.4% to the second type and 32.4% to the third type. Most enterprises with the above-average labour productivity are concentrated in the central and North-Western part of the district.

#### **Types of agricultural enterprises by relative employment in the Nitra district**

Studying the indicators – labour productivity or economic efficiency, it is important to notice that the higher the value of the indicator, the better evaluated enterprise. On the contrary, the relative employment was evaluated in the different way; hence, the lowest value of the indicator means the lower relative employment (positive fact is to achieve the values of previous indicators by fewer workers). One of the important employment indicators is the number of people employed in agriculture per 100 ha of agricultural land. In the Slovak Republic, the indicator of relative employment represented by the number of workers per 100 ha of agricultural land was 14.7 in 1989, 4.7 in 2000 and only 2.2 workers per 100 ha of agricultural land in 2004. Compared to 1989, the relative employment decreased by 85% in 2004. The lower value indicates the lower employment in agriculture. In the Nitra district, the indicator was 15.8 workers in 1991, 5.3 in 1998 and it fell down to 3.4 workers per 100 ha of agricultural land in 2004, what means the decline by 78% compared to 1991. Consequently, according to the workers density per

100 ha of agricultural land or the relative employment, the agricultural enterprises are divided into three categories as follows: 1<sup>st</sup> type of enterprise with the low relative employment – up to 3 workers per 100 ha of ag.l., 2<sup>nd</sup> type of enterprise with the average relative employment – 3.1 to 6.0 workers, 3<sup>rd</sup> type of enterprise with the high relative employment – 6.1 and more workers per 100 ha of ag.l. There are 37.1% of enterprises operating with less than 3 workers per 100 ha of ag.l., which is a positive factor. Thus, enterprises of this type have a low relative employment. The second type involves 45.7% of enterprises and it is characterised by the predominance of cooperative farms over limited liability companies. The last type with the high relative employment includes 17.2% of enterprises. Limited liability companies predominate in this type.

## CONCLUSION

Agricultural potential of the analysed district is very high. The area is characteristic by natural conditions suitable for crop and animal production. In terms of the legal forms, the limited liability companies predominate in the researched area. The cooperatives farm the largest area and they also present the largest average area. They hold the second position in the number of enterprises by the legal forms. Regarding the number of workers, the medium-sized enterprises predominate in the selected region. Older employees predominate in the age structure and workers with the vocational training in the educational structure.

Most agricultural enterprises were classified as the types with the average or above-average economic efficiency. The cooperative farms achieved a higher economic efficiency. As regards the labour productivity, businesses with average values are the most numerous; although the limited liability companies presented better values. In the district, agricultural enterprises with the average relative employment appeared the most often. The obtained financial results have proved the effective work of managers who are at home in the marketplace. Indeed, the still increasing price of production inputs, relatively low prices of agricultural commodities and market problems have influenced the agricultural business economics also in the Nitra district.

The tradition of intensive agriculture has resulted from the optimum natural conditions for agricultural production there. The district is also rich in the qualified labour force. However, it misses sufficient capital for the production recovery. The number and density of population is quite high what consequently ensures

a high demand for food. This is why the food processing industry should be strengthening in the district. A bigger interest of foreign investors may support this agricultural and food production region.

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