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Book of Proceedings

The Seminar

**AGRICULTURE AND RURAL DEVELOPMENT -
CHALLENGES OF TRANSITION AND
INTEGRATION PROCESSES**

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VOJVODINA'S AGRICULTURE – ANALYSIS & POSSIBILITIES

Nebojša Novković¹, Beba Mutavdžić², Nataša Vukelić³

Summary

The share of agricultural population in the total population of Vojvodina is below 11%. The agricultural population of Vojvodina accounts for 26% of agricultural population, i.e. 24% of the active agricultural population of Serbia. Per 1 inhabitant there is 0.88 ha of agricultural land or 0.78 ha plough land. Having in mind that the average farm size is about 3.59 ha of used arable land and that each farm has about 3 separate parcels, it could be concluded that Vojvodina has a very unfavourable property structure.

Corn is the most dominant plant species in Vojvodina. It is grown on about 630,000 ha with average yield of 5.3 t/ha, and annual production of about 3.3 million tons. Vojvodina accounts for around 58% of corn production in Serbia. Wheat is produced averagely on 330,000 ha with average yield of about 3.7t/ha and annual production of around 1.2 million tons. Vojvodina accounts for over 56% of the total wheat production in Serbia.

The gross domestic product in agriculture is larger than the gross domestic product in food industry, which means that a significant part of agricultural production is spent or exported in raw state, and not processed within own capacities. The share of Vojvodina in gross domestic product of food industry in Serbia (47.3%) is larger than its share in gross domestic product of agriculture of Serbia (39.6%), although the structure of agricultural production in other parts of Serbia is more intensive (vegetable growing, fruit growing and animal husbandry are more dominant). This is due to the fact that in Vojvodina there are more capacities for grain and industrial crop processing.

The real capabilities of faster development of Vojvodina's agriculture lie in the multi-functional development. This means that one part of the agricultural resources will be used in conventional manner by intensifying agricultural

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production to the limits of sustainable development, a part of the resources will be used for non-agricultural purposes (agro-eco tourism, hunting, fishing and sports tourism and catering, and other services and the production of renewable energy), while a part of resources will be by used for organic and safe food.

Key words: *Vojvodina, agriculture, competitiveness*

JEL classification: *C10, Q10, E23*

1. Introduction

The agriculture of Vojvodina reached its peak during the 1980s. During the 1990s, there was an extreme decline in all aspects of its agricultural development. At the beginning of the 21st century, the agriculture was recovering very slowly from the collapse in its development in the 1990s. The future development of Vojvodina's agriculture can be directed towards the resumption of positive productive and economic results from the 1980s; however, through the classical investments in agricultural development, it will be a very slow process.

The real capabilities of faster development of Vojvodina's agriculture lie in the *multi-functional development*. This means that one part of the agricultural resources will be used in conventional manner by intensifying agricultural production to the limits of sustainable development, a part of the resources will be used for non-agricultural purposes (agro-eco tourism, hunting, fishing and sports tourism and catering, and other services and the production of renewable energy), while a part of resources will be used for organic and safe food.

2. Method of work and data sources

Researches in this paper obtain analysis of agricultural capacity (agricultural population, land capacity, depends of way of usage, main (reproductive capacity in animal production in the most important sort of animals), production results (sowing area, yields, total production) of main plant products (wheat, maize, soya, sugra beat), and animal products (meat and milk), as the conditions and production and economics results of agriculture of Serbia in the period from 2001, to 2010.

Statistical data are processed by standard statistical methods: average value (\bar{X}), minimum, maximum, coefficient of variation (Cv), and change rate (r). The average year change rate was accounting directly from absolute value of time-seizure elements, by using a next formula:

$$r=(G-1); \quad G=\left(\frac{Y_n}{Y_1}\right)^{\frac{1}{n-1}} \quad (1)$$

where is:

r = yearly change rate

G = constant relative change of variable

Y_1 = absolute value of first element of time-serial

Y_n = absolute value of last element of time-serial

n = number of elements of time-serial.

On the base of quantitative - statistic analysis, on the next step of research, the qualitative, SWOT analysis is implemented. The SWOT analysis of Vojvodina's agriculture was realised, as a qualitative method of strategic position analyses.

The SWOT analysis is a qualitative method for the strategic planning. SWOT is the acronym of the words: STRENGTHS, WEAKNESSES, OPPORTUNITIES and THREATS. This method is based upon the comparison of the internal features of a system, in this case of the agriculture of Serbia (advantages and shortcomings), with capabilities and perils from the surroundings. By this way, the SWOT analysis combines the evaluation of the internal features, with those coming from the external sources, upon which the system does not have a control. The SWOT analysis is the main process used in the situational analysis. The system should activate its powers, overcome its shortcomings, use capabilities and resist the perils. The analysis of powers and shortcomings of a business system is also called "an internal evaluation", because it refers to the factors within the system which can be controlled. "The external evaluation" includes opportunities and threats, which are usually outside of the system control. Opportunities and threats could be related to: market, technology, economy, society, law legislation, ecology.

The purpose of the SWOT analysis is to highlight the main opportunities and threats, and to simultaneously identify the key aspects of system ability to ensure power and mark shortcomings in dealing with the changes in surroundings. The results of such a situational analysis are the basis for the formulation of the strategy of development of agriculture in Serbia.

The data acquired from the Republic Office for Statistics of Serbia have been used in this research.

3. Resource analysis

The share of agricultural population in the total population of Vojvodina is below 11%. The agricultural population of Vojvodina accounts for 26% of agricultural

population, i.e. 24% of the active agricultural population of Serbia. Per 1 inhabitant there is 0.88 ha of agricultural land or 0.78 ha plough land. Having in mind that the average farm size is about 3.59 ha of used arable land and that each farm has about 3 separate parcels, it could be concluded that Vojvodina has a very unfavourable property structure.

Vojvodina occupies 35% of agricultural area of Serbia. The arable land makes 39%, while plough land is even 47%. However, for the most intensive forms of land usage, i.e. orchards and vineyards, it accounts for only 7% and 16%, respectively. On the other hand, its share in the most extensive ways of land usage, i.e. lawns and pastures, is only 6% and 13%, respectively. Grain is the most dominant group of crops (66%) on the plough land of Vojvodina, followed by industrial crops (22%), vegetables (5%) and forage plants (5%). Serbia, on the other hand, has different structure. After grain, forage crops (14%) are the most dominant plants, followed by industrial crops (11%), and vegetables (9%). Vojvodina accounts for 50% of the area under grain in Serbia, 96% of the area under industrial crops, 28% of the area under vegetables and 17% under forage crops.

In Vojvodina, only between 1.2% and 4.4% of arable land is irrigated, which is intolerably low percent compared to the potentials. The irrigation systems built earlier are out of use now either because being neglected or out of order. Only a small number of them are operable at the moment.

There is relatively little animal husbandry in Vojvodina (25 of heads per 100 ha of agricultural land). Pig-breeding (49%) has the dominant position in the structure of animal livestock, followed by cattle-breeding (38%), poultry-breeding (7%) and sheep breeding (3%) at the fourth position. Vojvodina accounts for 15% in the basic cattle stock of Serbia, 17% in the reproductive capacities of pig-breeding and 11% in the basic stock of sheep.

4. Production results

Corn is the most dominant plant species in Vojvodina. It is grown on about 630,000 ha with average yield of 5.3 t/ha, and annual production of about 3.3 million tons. Vojvodina accounts for around 58% of corn production in Serbia. Wheat is produced averagely on 330,000 ha with average yield of about 3.7t/ha and annual production of around 1.2 million tons. Vojvodina accounts for over 56% of the total wheat production in Serbia.

Sugar beet is grown on the area 52 000 ha on average with average yield of 41t/ha while annual production is around 2.2 million tons. Vojvodina accounts for 96% of sugar beet production in Serbia. Sunflower is grown in Vojvodina averagely on 160,000 ha with average yield of about 2t/ha and annual production of 320,000 t.

Almost, the entire sunflower production of Serbia comes from Vojvodina (93%). Also, soybean in Serbia is predominately produced in Vojvodina (94%). Soybean is grown on about 110,000 ha with average yield of around 2.2t/ha and annual production of 250,000 t.

The fruits prevailingly grown in Vojvodina are: apple (40%), plum (22%), sour cherry and pear (11%). Apple is produced most (65,000 t), followed by plum (38,000t), sour cherry (14,000t) and peach (11,000t). Viticulture production is performed on small family farms as well as plantations. The annual grape production is about 74,000 t.

5. Economic conditions and results

The gross domestic product in agriculture is larger than the gross domestic product in food industry, which means that a significant part of agricultural production is spent or exported in raw state, and not processed within own capacities. The share of Vojvodina in gross domestic product of food industry in Serbia (47.3%) is larger than its share in gross domestic product of agriculture of Serbia (39.6%), although the structure of agricultural production in other parts of Serbia is more intensive (vegetable growing, fruit growing and animal husbandry are more dominant). This is due to the fact that in Vojvodina there are more capacities for grain and industrial crop processing.

6. Export of agricultural-food products

The average annual value of export has reached 255 million dollars. In the structure of export, the groups of the goods like sugar, honey and their products participate with 39.3%, followed by grains and their products with 18.2%, and vegetable and fruit with 13.3%.

The export potentials of agricultural complex of Vojvodina are: sugar and confectionery, edible sunflower oil, wheat and corn (mercantile and seed corn), seed soybean and sunflower, fruit (fresh and processed – sour cherry, strawberry, apple, apricot), vegetables (fresh and processed – frozen green peas, green beans, sweet corn), heifers and steers for slaughter, baby beef, lambs for slaughter, lamb, their high-quality products (foiled or canned ham and shoulder ham, etc) beer, non-alcoholic beverages, mineral water, wine, unconventional agricultural products (frogs, snails, honey, medical herbs) and safe food.

7. SWOT analysis

Developing potentials of agriculture of Vojvodina are:

- Excellent natural conditions for agricultural production (soil, climate, water resources),
- Comparative advantages of micro-regions (the hill of Fruška Gora, the sandy area of Subotička peščara, the Vršac mountains),
- Good agricultural practices in conventional agricultural production,
- Excellent precondition for multi-functional agriculture (excellent natural resources for development of tourism, hotel management, energy production from renewable sources)
- Relatively qualified and educated labour,
- Developed processing capacities,
- Educational, scientific and research institutions and agricultural extension service centres.
- Provincial institutions prepared to develop agricultural complexes.

The weak points are:

- Small and unorganized estates and parcels of farms,
- Extensive production in structure and yields,
- Poor animal husbandry,
- Inappropriate solution for the use of the state-owned land,
- Bad economic conditions for using water potentials for irrigation,
- Weak organisation & management of farms,
- Insufficient support to the development of agriculture by the state.

Developing possibilities are:

- Regulation and organization of land areas,
- Extension of irrigative areas (possibility for stubble and additional crop sowing),
- Intensifying of plant and animal production,
- Higher level of product finalization in own processing capacities,
- Improvement of processing technology for agricultural products,
- Development of multi-functional production and diversification: development of agricultural-ecological tourism (agro-tourism, tourist events in rural areas, spa tourism, fishing and hunting tourism), catering (on farms, fresh and healthy food, home-made food) energy production from renewable sources (harvest residues, wind & solar energy, etc),

- Increase of competitiveness with the development of SME (small and middle sized enterprises) and cluster-integration,
- Increase of export possibilities, by ISO standardization and increase of product quality,
- Development of ecological production, medical and aromatic herbs production.

Threats for the development are:

- Market limitations (low domestic payment demand),
- Export limitations (export quotes, non-custom barriers, no export stimulations),
- Insufficient possibilities of the state to support agricultural development,
- Lack of high-quality resources for development and functioning,
- Lack of or insufficient legal regulations,
- Strong negative influence of interest groups on the measures of agrarian policy,
- Insufficient influence of professional and scientific institutions on the development of agriculture, and the economic policy measures in agriculture.

8. Conclusion

The most important conditions and incentives for development of agricultural business in rural areas of Vojvodina are:

- Stimulation of building and use of irrigation systems,
- Stimulation of increasing investment in rural areas,
- Organization and rational use of land,
- Regulation of the infrastructure and development of institutions in rural areas;
- Direct foreign and state investments of local management organs in the development of firms in rural areas,
- Consistent and professional agrarian policy which would serve the development of agricultural business,
- Development of institutions for development of small agricultural businesses and entrepreneurship,
- Education of rural population
- Improvement of organisation (cluster development, cooperatives and extension services).

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