DEVELOPMENT OPPORTUNITIES OF AGRIBUSINESS IN THE AP VOJVDINA

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SUMMARY

As agricultural production is one of the strategic branches of economy in the AP Vojvodina, it is of paramount importance to examine the development opportunities of Vojvodinian agriculture. The primary focus of this research is on the agricultural resources in the AP Vojvodina and both distinctive and economic characteristics of Vojvodinian agricultural production. The purpose of this research is to analyze, both quantitatively and qualitatively, the strategic position of the agricultural complex in the AP Vojvodina, define its strengths, weaknesses, opportunities, and limitations, and establish a developmental strategy on the basis of the current situation. The results obtained indicate that there is a shortage of and quality deterioration in the agricultural production resources in the AP Vojvodina. A significant decline was also recorded in the workforce, water resource utilization, livestock units per hectare, and production intensity of all agricultural products considered in the research. Accordingly, the authors conclude that the quantity and quality of agricultural resources in the AP Vojvodina should be preserved by increasing the following: the knowledge and skills of agricultural producers, number of livestock units per hectare, areas devoted to perennial crops (especially in micro-regions), competitiveness of agricultural sectors, degree of production finalization, and rural area development.

INTRODUCTION

Due to variety of uses as both edible and plant with The environment (soil, climate and access to water supplies) and traditional ways of agricultural production favor the development of the agricultural sector in the AP Vojvodina (APV). Unfortunately, these resources are not used to their full potential. This study analyzes the agricultural resources in Vojvodina (workforce, agricultural holdings, bearing capacity of soil, livestock units, and perennial crops) and the characteristics of Vojvodinian agricultural production (land area and the primary processing of agricultural products). In brief, the analysis focuses on the entire APV agricultural complex. Furthermore, trends in the parameters analyzed were observed in the period under consideration in order to forecast their future movements. The purpose of this research is to determine, both quantitatively and qualitatively, the strategic position of the APV agricultural complex, i.e. its strengths, weaknesses, opportunities and limitations. Subsequently, a comprehensive strategy of the Vojvodinian agricultural development was formulated, entailing the main goals, possibilities, and directions of development. A formulated development strategy should indicate methods and measures that would ensure the achievement of development goals within the planned period. Numerous authors have studied the development opportunities of agriculture in the AP Vojvodina. Odavić & Novković (2009) performed an economic analysis of the Vojvodinian agricultural budget in the period 2007–2009. Their findings indicate that the funds allocated to the agricultural sector were insufficient, and that the agricultural policy had to undergo radical changes.
Novković et al. (2013) analyzed the development opportunities of agriculture in the AP Vojvodina, i.e. the agricultural capacities, production records of the main crops and animal products, and the economic performance of Vojvodian agriculture in the period 2001–2010. Using descriptive statistics and SWOT analysis, the authors concluded that the following conditions are of crucial importance to the agricultural development in the AP Vojvodina: incentives to build and use irrigation systems, increasing investments in rural areas, rational use of land, organization of infrastructure in rural areas, and consistent and professional agricultural policies.

Đurić & Prodanović (2017) analyzed the state support mechanisms for the agriculture and rural development in the AP Vojvodina. The objective of their study was to determine whether the 2017 government subsidies were consistent with the agricultural and rural development priorities defined for the period 2014–2020. The authors argue that the largest share of the total government subsidies allocated to the agriculture and rural development in the AP Vojvodina is claimed by building and reconstructing the irrigation systems, rebuilding agricultural machinery, and incentivizing the younger population in the rural area. Matkovski et al. (2021) analyzed the export opportunities of agricultural food products in the AP Vojvodina in the period 2012–2018. Their findings indicate that the APV plant production offered the most competitive products, whereas the livestock production was in a dire situation. They also emphasized that agricultural policy measures should promote more intense agricultural production to create a solid foundation for the advancement of the food industry. The following authors have addressed the development issues of the agricultural sector in the AP Vojvodina: Novković & Rodić, 2001; Mutavdžić, 2009; Novković et al., 2014; Novković et al., 2019; Novković et al., 2020; Novković et al., 2021; Tekić et al., 2020.

MATERIAL AND METHODS

A (quantitative) descriptive statistics analysis was performed to determine the mean and extreme values of parameters observed in the period under consideration (2015–2020), i.e. their variability and inherent trends. The following parameters of the APV agricultural complex were analyzed: available resources (workforce, land, livestock, and water sources), production results (land area, annual production, and yields), production and parity prices, and the food industry according to the company size. The official data of the Statistical Office of the Republic of Serbia served as the primary source of data for the SWOT analysis performed in this study. Upon quantitative and qualitative analysis, the agricultural complex in the AP Vojvodina was characterized, and its prospective development goals and their implementation measures were defined.

RESULTS AND DISCUSSION

The analysis of resources and production results

The 2012 census in the Republic of Serbia (RS) shows that 1,442,628 people were employed in the Serbian agricultural sector, of whom 296,111 (20.54%) reside in Vojvodina. According to a survey done in 2018, the workforce in RS numbered 1,336,940 (7.33% less than in 2012) and the workforce in APV decreased to 268,946 individuals (9.17% less than in 2012). Furthermore, the share of agricultural workforce in the total APV and RS workforce fell to 20.12%. An average of 3.87 hectares was recorded per every agricultural employee in RS, whereas such average was 7.37 hectares in APV (which is more than 90% larger).

The AP Vojvodina owned 1,983,154 hectares of agricultural land, accounting for 38.29% of the total agricultural land in Serbia. The number of agricultural holdings in the AP Vojvodina was 564,540, accounting for 22.51% of the total number of farms in the Republic of Serbia. The average size of an agricultural holding was 15.61 hectares, i.e. 70% more than the national average of 9.17 hectares.

A total of 74,705 hectares were irrigated in the AP Vojvodina, accounting for only 3.77% of the total agricultural land in the province, or rather 46.81% of the total irrigated land in the Republic of Serbia. Only 20,057 farms in the AP Vojvodina irrigated their land, which is 15.78% of the total number of farms in the AP Vojvodina, or 22.51% of the total number of farms in the Republic of Serbia.

According to the 2018 livestock survey, a total of 91,925 dairy cows were recorded in the AP Vojvodina, accounting for 21.67% of the total number of dairy cows in the Republic of Serbia. According to the Statistical Office of the Republic of Serbia (PO12, 2021), the following numbers of livestock and poultry were recorded in the AP Vojvodina on 1 December 2020: 259,527 of cattle, 1,260,970 of pigs, 277,242 of sheep, and 5,462,441 of poultry. In the period 2015–2019, the total number of livestock in the AP Vojvodina was 592,400, and continued to grow at an annual rate of 0.25%. The number of livestock in the AP Vojvodina accounted for 39.73% of the total number of livestock in the Republic of Serbia.
In the AP Vojvodina, an average of 29.87 livestock units was recorded per every 100 hectares of agricultural land, which approximates the national average, but is significantly lower than the average in the most agriculturally developed EU countries.

The average number of cattle in the AP Vojvodina was 256,400 heads, accounting for 28.59% of the total number of cattle in the Republic of Serbia. The number of cattle in the AP Vojvodina indicates an increasing trend at an average annual rate of 1.47%, whereas such trend is negative in Serbia with an annual rate of -0.49%.

In the AP Vojvodina, the average number of sheep was 276,800, accounting for only 16.26% of the total number of sheep in the Republic of Serbia. The number of sheep in the AP Vojvodina shows an increasing trend with an average annual growth of 4.36%. The number of pigs in the APV was 1,254,800, accounting for as much as 42.10% of the total number of pigs in Serbia. The number of pigs shows a decreasing trend at an average annual rate of -2.16%. Considering the well-known ‘pig cycle’, this rate of decline should not be a cause for concern because the peak of their cycle was in 2015, i.e. the first year of the period under consideration.

In the AP Vojvodina, the number of poultry was 5,553 million, accounting for 33.72% of the total number of poultry in the Republic of Serbia. The number of poultry in the AP Vojvodina indicates a positive trend with an annual rate of 2.65%.

The perennial crop analysis performed involved the land area, annual production and yield of apples, plums, cherries and grapes. The average area devoted to apples in the AP Vojvodina was 7,198 hectares, accounting for 28.41% of the total apple areas in Serbia. The apple areas in the AP Vojvodina indicate a growing trend at an average annual rate of 1.90. The average annual apple production in the AP Vojvodina was 181,867 tons, accounting for 41.89% of the total apple production in Serbia. The apple yields in the APV were 25.27 tons per hectare, exceeding the national average of 17.14 t/ha by 47%. The apple yields in the AP Vojvodina show a declining trend at an average annual rate of -1.34%.

The average plum area in the AP Vojvodina was 2,213 hectares, accounting for only 3.04% of the total plum area in the Republic of Serbia. The APV plum area indicates a declining trend at an average annual rate of -1.67. The average annual rate of plum production in the AP Vojvodina was 30,572 tons, accounting for 7.12% of the total plum production in Serbia. The annual production of plums in the AP Vojvodina also shows a declining trend at an average rate of -1.64%. The APV plum yields were 13.8 tons per hectare, thus exceeding than the national average of 5.89t/ha. The APV plum yields suggest a growing trend at an average annual rate of 13.8%.

The APV cherry area was 1,717 hectares, accounting for 9.72% of the total cherry area in the Republic of Serbia. The APV cherry area indicates a strongly increasing trend at an average annual rate of 10.08. The average annual production rate of cherries in the AP Vojvodina was 11,985 tons, accounting for 11.56% of the total cherry production in Serbia. In contrast to the APV cherry area, the annual APV cherry production shows a declining trend at an average rate of -2.20%, which is a consequence of a large decrease in cherry yields at an annual rate of -11.03%. The average cherry yield in the AP Vojvodina was 7 tons per hectare.

In the period 2015–2020, the average vineyard area in the AP Vojvodina was 4,181 hectares, accounting for 20.19% of the total vineyard area in the Republic of Serbia. The APV vineyard area shows a declining trend at an average annual rate of -7.97%. The average annual production of grapes in the AP Vojvodina was 33,319 tons, accounting for 20.93% of the total grape production in Serbia. The annual production of grapes in the AP Vojvodina also suggests a declining trend at a slightly lower average annual rate of -6.23%. A total of 8 tons of grapes were produced per hectare in the AP Vojvodina, greatly exceeding the national average. The APV grape yields increased at an average annual rate of 2%, also exceeding the national average.

The production of major crops (corn and wheat), industrial crops (sunflower, soybean, sugar beet, and rapeseed), and fodder crops (alfalfa and corn silage) in both Serbia and Vojvodina were also examined in this study.

Corn is the predominant crop in the AP Vojvodina. In the period under consideration, the average corn area in the AP Vojvodina approximated to 557,780 hectares, accounting for 56.89% of the total corn area in Serbia. A stagnant trend was recorded in the APV corn area with an average annual rate of change of -0.17%. The average annual corn production in the AP Vojvodina was 4,176,027 tons, accounting for 64.2% of the total corn production in Serbia and indicating a growing trend at an average annual rate of 7.28%. A corn yield of 7.53 tons per hectare was achieved in the AP Vojvodina, which is 13.23% higher than the national average. The APV corn yields suggest a rising trend of 7.69% per year.

Approximately 305,412 hectares were devoted to wheat in the AP Vojvodina, accounting for 51.72% of the total area devoted to wheat in the Republic of Serbia. The APV wheat area shows a growing trend at an average annual rate of 1.34%. The average annual production of wheat in the AP Vojvodina was 1,592,453 tons, accounting for 59.95% of the total annual wheat production in Serbia. The APV wheat production indicates an increasing trend of 2.62%. The average yield of wheat in the AP Vojvodina was 5.22 t/ha, exceeding the national average by 16.44% and suggesting a slightly growing trend at an annual average rate of 1.2%.
An average area of 189,845 hectares was devoted to sunflowers in the AP Vojvodina, accounting for 90% of the total area devoted to sunflowers in Serbia. The APV sunflower area show a rising trend at an average annual rate of 5.10%. The average production of sunflowers in the AP Vojvodina was 566,949 tons, accounting for 92% of the total annual production in Serbia. The average yield of sunflowers in the AP Vojvodina was 2.97 tons per hectare, suggesting a rising trend at an annual rate of 1.44%.

The average soybean area in Vojvodina was 186,945 hectares, accounting for 91.08% of the total soybean area in Serbia (making soybeans an even more predominant crop than sunflowers). The APV soybean area shows a rising trend at an average annual rate of 4.51%. The annual production of soybeans in the APV averaged 550,379 tons, accounting for 92% of the total soybean production in Serbia. The APV soybean production indicates a strongly increasing trend at an annual average rate of 9.95%. The average yield of soybeans in the AP Vojvodina was 2.93 tons per hectare, showing a rising trend at an average annual rate of 5.06%.

An average area of 43,633 hectares was devoted to sugar beets in the AP Vojvodina, accounting for 95.79% of the total area devoted to sugar beets in Serbia. The APV sugar beet area shows a declining trend at an average annual rate of -2.02%. The annual production of sugar beets in the AP Vojvodina averaged 1,265,908 tons, accounting for almost 97% of the total sugar beet production in Serbia. The annual sugar beet production in the AP Vojvodina indicates a decreasing trend of -1.37%. The average sugar beet yield in the AP Vojvodina was 42.17 tons per hectare, suggesting a slight increase of 0.64% per year.

An average area of 20,124 hectares was devoted to rapeseed in the AP Vojvodina, accounting for 82.62% of the total rapeseed area in Serbia. The APV rapeseed area suggests a strongly growing trend at an average annual rate of 15.50%. The annual production of rapeseed in the AP Vojvodina averaged 60,076 tons, accounting for 86.87% of the total rapeseed production in Serbia. The annual rapeseed production in the AP Vojvodina also indicates a strongly increasing trend of 17.92%. The average rapeseed yield in the AP Vojvodina was 2.98 tons per hectare, showing a slight annual increase of 1.99%.

With an average area of 25,158 hectares devoted to its cultivation, alfalfa is the predominant fodder crop in the AP Vojvodina, accounting for more than 23% of the total alfalfa area in Serbia. The APV alfalfa area indicates a declining trend at an average annual rate of -7.93%. The annual production of alfalfa in the AP Vojvodina averaged 148,934 tons, accounting for almost 27% of the total annual alfalfa production in Serbia. The APV alfalfa production practically shows a stagnant trend (with a declining rate of -0.85% per year). The average yield of alfalfa hay in the AP Vojvodina was 6 tons per hectare.

An average area of 10,553 hectares was devoted to silage corn in the AP Vojvodina, accounting for almost 32% of the total silage corn area in Serbia. The APV silage corn area suggests a rising trend at an average annual rate of 2.57%. The annual production of silage corn in the AP Vojvodina averaged 266,148 tons, accounting for 41% of the total silage corn production in Serbia. The annual production of silage corn in the AP Vojvodina indicates a rising trend at an average annual rate of 5.37%. The APV silage corn yield was 25.25 tons per hectare with a growth rate of as much as 2.75% in the period under consideration.

The APV vegetable production in the period 2015–2020 was also analyzed, including the production of major vegetable crops such as potatoes, peas, pepper, tomatoes, cabbage, and onions.

With an average area of 5,649 hectares, potatoes are the predominant vegetable crop in Vojvodina, accounting for approximately 16% of the total potato area in Serbia. The APV potato area shows a strongly decreasing trend at an average annual rate of -11.89%. The annual production of potatoes in the AP Vojvodina was 137,782 tons with a declining annual rate of -8.20%. The average yield of potatoes in Vojvodina was 22.13 tons per hectare, exceeding the national average by 44.85%. The APV potato yield suggests a downward trend at an annual rate of -1.79%.

With an average area of 3,875 hectares, peas are the second most prevalent vegetable crop in the AP Vojvodina, accounting for more than 52% of the total pea area in Serbia. The APV pea area shows a declining trend at a rate of -7.27%. The average annual production of peas in the AP Vojvodina was 20,542 tons, accounting for 60% of the total pea production in Serbia and indicating a downward trend at an average annual rate of -6.40%. The average yield of peas in the AP Vojvodina was 5.28 tons per hectare, suggesting a slight annual growth rate of 0.77%.

An average area of 2,423 hectares was devoted to tomatoes in the AP Vojvodina, accounting for 27% of the total tomato area in Serbia. The APV tomato area shows have a declining trend at an average annual rate of -4.69%. The average annual production of tomatoes in the AP Vojvodina was 53,746 tons, accounting for over 39% of the total tomato production in Serbia. The annual tomato production in the AP Vojvodina decreased at an average annual rate of -6.39%. Moreover, the average yield of tomatoes was 22.13 tons per hectare with an annual declining rate of -1.79%.

With an average area of 2,220 hectares, peppers accounted for over 16% of the total pepper area in Serbia. The APV pepper area shows a strongly decreasing trend with an annual rate of -21.29%. The annual production of pepper in the AP Vojvodina averaged 32,491 tons, accounting for over 20% of the total pepper production in Serbia.
Downward trends were recorded in both the APV pepper area and production. Only the APV pepper yields show a slightly growing trend at an annual rate of 0.44%. The APV pepper yield averaged 14.68 tons per hectare, exceeding the national average by 26.80%.

An average area of 1,592 hectares was devoted to cabbage in Vojvodina, accounting for around 17% of the total cabbage area in Serbia. The APV cabbage area shows a significant downward trend at an average annual rate of -12.35%. The average annual production of cabbage in the AP Vojvodina was 49,041 tons, accounting for nearly 21% of the total cabbage production in Serbia and indicating a declining rate of -13.73%. The average yield of cabbage in the AP Vojvodina was 30.43 tons per hectare, exceeding the national average by 21.49%. The APV cabbage yields suggest a declining rate of -1.56%. An average area of 1,520 hectares was devoted to onions in Vojvodina, accounting for around 36% of the total onion area in Serbia. The APV onion area indicates a declining trend at an average annual rate of -5.62%. The average annual production of onions in the AP Vojvodina was 20,084 tons, with a declining annual rate of -7.55%. The onion production in Vojvodina accounts for over 53% of the total onion production in Serbia. The average yield of onions in Vojvodina was 13.07 tons per hectare, exceeding the national average by 48%. Furthermore, the APV onion yields show an average annual decline rate of -2.04%.

The analysis of production costs and parity price
The price and parity price of agricultural products are important factors in the quantitative analysis of their value. In agriculture (and a number of other sectors), there is a law of supply and demand movement. When the production of a commodity decreases, its price typically increases, and vice versa. Additionally, the parity prices of agricultural products influence the producer’s choice of products for the next year’s production, i.e. the structure of agricultural products. The parity prices of agricultural products and their production inputs influence the production volume of agricultural products. Moreover, the parity prices of agricultural products (in contrast to food products) impact the finalization degree of personal products, i.e. the supply of raw materials to the food industry. In this study, the parity prices of specific agricultural products were analyzed to determine their relative economic importance. In the period under consideration, the average price of wheat in the AP Vojvodina amounted to RSD 16.71 per kilogram, and it was found relatively stable with a low coefficient of variation of 6.61%. The price of wheat shows a slightly increasing trend (almost stagnating) at an average annual rate of 0.37%. The average price of corn amounted to RSD 15.09 per kilogram, and it was found even more stable than the price of wheat with a coefficient of 4.66%. The price of corn indicates a slightly decreasing trend with an average annual rate of -1.33%. On balance, the Vojvodinian wheat market was relatively stable, and it is expected to remain so in the upcoming mid-year period.

The price movements recorded in industrial plants were different. The average price of sugar beets amounted to RSD 3.78 per kilogram. The price of sugar beets suggests a growing trend at an average annual rate of 4.07%. The price of sunflowers averaged 31.14 RSD/kg, indicating a moderate variability and a downward trend at an average annual rate of -6.37%. Similar trends were recorded in soybeans, with an average price of 38.21 RSD/kg and a declining annual trend of -2.47%. The price of rapeseed averaged 37.71 RSD/ha, showing a slightly decreasing trend at a rate of -0.76%.

In contrast to the field crop prices recorded in the period under consideration, which were stagnant or decreasing, the vegetable prices recorded show a growing trend. The average price of potatoes was 25.92 RSD/kg with an average annual growth rate of 6.31%. The price of tomatoes averaged 50.11 RSD/kg with an average annual growth rate of 11.72%. The price of onions averaged 27.91 RSD/kg with a high annual growth rate of 17.33%. The price of peppers averaged 58.88 RSD/kg, indicating a growth trend at an average annual rate of 9.64%. Of all the vegetable crops analyzed, the price of cabbage shows the slightest increasing trend at an annual rate of only 1.89% and an average price of 21.21 RSD/kg.

The prices of livestock products were either stagnant or decreasing in the period under consideration. Starting at 222.86 RSD/kg, the average price of young fattening cattle was extremely stable. The variation coefficient was 3.5%, and the average annual growth rate was 0.03%. A similar trend was recorded in the price of cow milk with an average price of 31.19 RSD/l, a variation coefficient of 2.18%, and an average annual growth rate of 0.04%. However, negative trends were recorded in the prices of fattening pigs and broilers. The price of fattening pigs averaged 229.99 RSD/kg, with a variation coefficient of 19.01% and a declining annual rate of -3.40%. The price of fattening broilers averaged 107.39 RSD/kg, and it was found relatively stable with a declining rate of -4.08%

Parity prices indicate relative trends in the prices of individual agricultural products. The parity prices in this study were established according to the price of wheat, which has always been an informal benchmark for assessing the prices of other agricultural products, their production inputs, and food products in general. A descriptive analysis of the parity prices of important agricultural products considered is presented in Table 1.
As seen in Table 1, the vegetable crops significantly improved their relative price. The parity price of corn shows a slightly declining trend, but it can also be considered stable. On balance, the parity prices of industrial plants were negative compared to that of wheat. The parity prices of young fattening cattle and cow milk were found stable compared to the wheat price, whereas the parity prices of fattening pigs and broilers show a decreasing trend.

### Food industry

In the period 2014–2020, an annual average of 1,000 food companies was operating in the AP Vojvodina. The number of food companies increased at an annual rate of 2.99%. The number of microenterprises averaged 779 annually, whereas the number of small, medium and large companies averaged 148, 54 and 20, respectively. The number of employees in the food industry amounted to 23,844, increasing at an average annual rate of 1.45%. The largest number of employees was recorded in the large companies (41%), followed by the medium (27%), small (19%), and micro companies (13%). The number of employees in the medium and micro companies increased at annual rates of 5.4% and 3.86%, respectively. However, the number of employees in the small and large companies decreased at annual rates of -1.61% and -0.61%, respectively.

The capital value of APV food companies in the period under consideration averaged RSD 164.5 million, indicating an increasing trend at an annual rate of 2.77%. The capital values of large, medium, small and micro APV companies averaged RSD 99.3, 42.4, 15.9 and 6.9 million, respectively. Growing trends were recorded in the capital values of all APV food companies considered. The most notable growth rate was recorded in the micro companies (8.65%), followed by the medium (7.45%), small (1.89%), and large (0.57%) companies.

The total revenue of APV food companies averaged RSD 335.5 million annually, showing a growing trend at an annual rate of 2.06%. From the total income perspective, the large companies claimed the largest share of 55%, followed by the medium (29%), small (13%), and micro companies (3%). Growing trends were recorded in the total income of all APV food companies considered. The highest annual growth rate of 5.47% was recorded in the medium companies, followed by the micro (2.35%), small (0.76%), and large companies (0.51%).

### A SWOT analysis of the agricultural production in the AP Vojvodina

The following table presents the results of a SWOT analysis of the agricultural production in the AP Vojvodina (Tab. 2).

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>Favorable natural conditions for production (soil, climate, water resources, etc.)</em></td>
<td><em>Polluted environment and resources</em></td>
</tr>
<tr>
<td><em>Enduring tradition in conventional agricultural production</em></td>
<td><em>Unorganized land complex</em></td>
</tr>
<tr>
<td><em>Qualified workforce</em></td>
<td><em>Extensive structure of production</em></td>
</tr>
<tr>
<td><em>High development level of processing capacities</em></td>
<td><em>Small share of livestock breeding</em></td>
</tr>
<tr>
<td><em>Educational and scientific institutions</em></td>
<td><em>Insufficient use of water potential for irrigation</em></td>
</tr>
<tr>
<td><em>Institutions for agricultural development</em></td>
<td><em>Inability to provide adequate support for the development of agriculture</em></td>
</tr>
<tr>
<td><em>Agricultural extension service</em></td>
<td><em>The issue of elderly households and village devastation</em></td>
</tr>
</tbody>
</table>

Source: Authors’ calculations
Opportunities

- Organization of land areas
- Increasing land areas with irrigation
- Intensifying the structure of plant production
- Opportunities for a better land use
- Intensification of livestock breeding
- A higher degree of production finalization with personal capacities
- Multifunctional rural development
- Integration of production, processing, and marketing through cooperatives
- Establishing the ISO standardization and improving product quality
- Greater application of good cultural practices
- Development of organic production
- Digitalization of agriculture

Threats

- Marketing restrictions due to a weak solvent demand
- Decline in the able-bodied labor force in agriculture
- Constant decline in agricultural resources
- Soil degradation due to decreases in livestock and organic manure
- Climate change, less precipitation, and an increase in the average temperature
- The predominance of international corporations impeding the growth of the national economy
- Limited funds for development and functioning
- The absence and/or inadequacy of implementation and control of legal regulations
- Insufficient influence of institutions on rural development

CONCLUSION

The quantitative (statistical) and qualitative (SWOT) results obtained indicate a number of issues facing Vojvodinian agriculture. First and foremost, agricultural production resources are depleting and deteriorating. The arable land in the AP Vojvodina is diminishing and such negative trend is expected to continue in the future, despite the attempts to compensate for the loss of arable area by production intensification (higher yields).

A significant reduction in the agricultural labor force was recorded in the AP Vojvodina, which went from a surplus in the twentieth century to a sharp decline at present and an expected shortage in the future. There is also a pronounced problem of elderly farm households, which objectively do not have active workforce.

Water resources are not even remotely used to their full potential. The reasons for this lie in the quality of water, regular maintenance, and costs of water resource exploitation. Water shortages are rapidly becoming a cause for concern due to climate changes. Arid years occur, on average, every third or fourth year in Vojvodina.

The small number of livestock in the AP Vojvodina (livestock units per hectare) is a huge problem for animal production and overall economy. It also means that insufficient amounts of humus reach the soil through organic fertilizers, thus leading to its degradation. Furthermore, a number of other agricultural resources are not used rationally (land, labor, by-products, etc.).

The structure of APV agricultural production has significantly improved over the last couple of years. However, the arable land is still predominately devoted to grain, indicating growing trends in industrial plant areas and their annual production, and significant downward trends in vegetable areas and their annual production.

In general, the intensity of production is not satisfactory in most of the agricultural products considered. The extremely high variation coefficient of yields indicates a strong impact of natural conditions on the production stability from season to season. The low intensity of agricultural production in reflected in the ‘dry farming’, inadequate agricultural technology, inability of meeting the optimal time frames due to outdated machinery, and low investments in diet and care (with plants and animals alike).

In the future, the following goals should be achieved to enhance the APV agriculture:
- preserving the quantity and quality of agricultural resources,
- increasing the knowledge and skills of agricultural producers,
- increasing irrigated areas,
- increasing the number of animal units and livestock production,
- increasing land areas in protected spaces,
- increasing the area of perennial plantations (especially in micro regions),
- developing organic production,
- increasing the competitiveness of the agricultural sector,
- increasing the degree of finalization of personal agricultural production, and
- maintaining and developing rural areas.

To accomplish the goals established above, the following measures should be implemented:
- taking a tougher stance towards changing the use of agricultural land,
- improving farmers’ education and professional skills,
- significantly increasing investments in irrigation systems,
• increasing land irrigation for the purpose of livestock farming development and an increase in the number of livestock units,
• increasing livestock breeding, which directly impacts the economic growth of agricultural households due to a faster turnover of capital and successive arrival of finished products,
• developing agricultural branches selectively considering micro-regions, natural conditions and tradition,
• increasing the competitiveness of the Vojvodian agricultural sector according to a sustainable agricultural development, i.e. an investment- and export-oriented model of economic growth, and
• creating formal and legal agricultural micro-regions in the AP Vojvodina, accompanied by the appropriate regional programs of integral development as a prerequisite and support for the sustainable development of APV agriculture.

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