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## Trends analysis in primary agricultural production off Serbia

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# TRENDS ANALYSIS IN PRIMARY AGRICULTURAL PRODUCTION OF SERBIA<sup>1</sup>

CVIJANOVIĆ DRAGO<sup>2</sup>, MIHAILOVIĆ BRANKO<sup>3</sup>, PEJANOVIĆ RADOVAN<sup>4</sup>

## Abstract

*Primary agricultural production is a significant factor of the total national economy, primarily due to its share in GDP and total employment. Together with food industry, this sector has over 15% of Serbian GDP. Although the share of the primary agricultural production in realized GDP has constantly decreasing since the beginning of 2000 (owing to bigger growth of GDP in other sectors of Serbian economy), the primary agriculture significantly contribute to other industrial sectors, which directly depend on raw materials from agriculture, then inputs industry for agriculture, as well as accompanying service activities. Initiated changes in the field of agriculture, although under influence of numerous factors, which have an amortization effect on them, have acquired a character of irreversible processes. A reform of agricultural sector can hardly return to a starting position, but there, first of all, can talk about its vacillating tempo and agrarian policy instruments, which often should set up a balance between diametrically opposite goals. In such conditions, Serbian agriculture has extraordinary place and role in the total economic development of the country, especially in the process of adjusting economic mechanisms for realization of specific social goals, on conduction of reforms and transition, and primarily on mitigation of the world economic/financial crisis' impact, which seriously jeopardize a revival and development of economy.*

**Key words:** *primary agriculture, natural resources, crop farming, livestock breeding, agricultural husbandries.*

## INTRODUCTION

The Republic of Serbia has favourable natural conditions for development of heterogeneous agricultural production, regarding that it is located on the most favourable area of north latitude. Together with the **climate, the land** represents the most important natural condition for development and dispersion of agriculture. According to the SORS data, Serbia disposes with around 5.097.000 ha of agricultural land (0,69 ha per capita), and arable land occupies around 3.301.000 ha. Thereat, 65% of the total Serbian territory does agricultural land, which is 82% in family husbandries' ownership.

Most of arable land is acidificated, which is a result of uncontrolled use of chemical means, and in Vojvodina is salted. In accordance, there are necessary agro-technical measures aiming to improve land structure – calcification, increasing use of organic fertilizers etc. As for **water resources**, the Republic of Serbia disposes with sufficient quantities for satisfying own needs, but only if uses rationally and protects from accidental or intentional pollution. The significant wealth represent mineral and thermo-mineral waters, which diversification of physical and chemical characteristics classifies our country into the richest areas on European continent.

**Forest resources** in the Republic of Serbia amount 2.349.720 ha. State forests cover 50,2%, and private 49,8%. The high origin forests cover the area of 44,1%, sprout forests 45,5%, plantations 1,6%, and bushes and shrubberies 8,8%. The least afforested region in Europe is the AP Vojvodina. A state of forests as a resource is unsatisfying and is distinguished by high share of bad quality forests, in inappropriate way cultivated artificial forests – therefore would preservation and improvement of forests' state and forestry development would be the state's task of high priority.

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## MATERIAL AND METHOD

In realization of research task was used a desk research of data which relate on trends in the primary agricultural production in Serbia. Such research implies using the data from the official sources: the data of the Statistical Office of the Republic of Serbia, materials of Serbian Chamber of Commerce etc; using the data from domestic and foreign literature; using internal documentation. There were also used quantitative methods, primarily – time series analysis. With combination of the stated research methods can get more reliable answer to the key questions, which impose within the trends analysis in the primary agricultural production in Serbia.

## RESULTS AND DISCUSSION

**Production of cereals.** The largest area of agricultural land in Serbia uses for cereals production and this production occupies around 60% of total plough-lands and gardens. A maize is the most represented culture with over 1,2 million sowed hectares, while a wheat is right behind, with around half million hectares. Due to large sowed areas under cereals, they are among sectors with the highest value of the primary production, which additionally increases by further processing. Serbia is the biggest regional producer of cereals, and according to the FAO data, it is on 19<sup>th</sup> position in the world regarding maize production and in 35<sup>th</sup> position regarding wheat production (2008) [5]. The production of cereals satisfies needs of domestic processing industry, while some quantities export. For example, in 2009, in total export value of goods from Serbia, in the first place is maize with 261 million USD of export value [6]. Market chain of cereals is short and very often exist informal channels of sale. Regarding average yields of cereals, Serbia is on the European bottom, and especially are low yields of wheat. There is little innovations in production and sale, and a price has an expressed seasonal trend, depending on balance needs, price and quality competitiveness.

**Industrial plants production.** Around 400 thousand hectares of plough land is under industrial plants (or around 12% of total plough lands and gardens). The most of areas under oleaginous plant is on the territory of Vojvodina, where also processing capacities have been placed. Besides a fact that average share of oleaginous plants in plant production value is around 5, 00% (i.e. around 6, 00% on family agricultural husbandries), sunflower and soy are among the most important agricultural cultures in Serbia (in last decade has been noticed also the growth in rape production). Serbia falls into a group of the biggest rape producers in Europe, and in the world, according to the FAO data, it takes 14<sup>th</sup> place in soy production and 15<sup>th</sup> in sunflower production [5]. Thanks to a long tradition and favourable climatic and land conditions for production, there achieve satisfying average yields of oleaginous plants. Domestic needs satisfy with oleaginous plants production, while significant export products are sunflower and soy oil. In accordance to the SORS data, in Serbian export commodity structure for 2009, the export of refined sunflower oil was on 40<sup>th</sup> position, and the export of raw sunflower oil was on 45<sup>th</sup> place [6]. The territory of Vojvodina disposes with the best land and climatic conditions in this part of Europe for growing sugar bear. The areas under sugar beat, as well as yields in last period have significantly varied. Although, sugar is significant export product and, according to the realized export value, is among 10 leading products.

The production results in crop production in 2011 were followed by poor financial effects, due to price decrease of some cultures (*table 1*). According to these financial results, only regarding sunflower and sugar beat were realized the positive effects, which had influenced to the total weaker result, i.e. the production value decrease of basic crop cultures, in regard to 2010 (19%). In accordance to the first evaluations, the total value of agricultural production in 2011 was amounted around 6 milliard euros [1].

**Table 1. Production value of basic crop cultures**

NAME	2010.			2011.			Index 11./10.
	in 000 tons	din/kg	in million RSD	in 000 tons	din/kg	in million RSD	
Wheat	1.630	26	42.380	2.076	20	39.444	93,1
Maize	7.207	21	151.347	6.463	16	103.408	68,3
Sugar beat	3.325	3	9.975	2.822	4,5	12.699	127,3
Sunflower	378	20	7.560	432	35	15.120	200,0
Soy	541	35	10.470	441	36	15.876	83,8
<b>TOTAL</b>			<b>230.197</b>			<b>186.547</b>	<b>81,0</b>

Source: *Agriculture in 2011 with foresseing for 2012 – evaluations, assessments and proposals, SCC, Association for Agriculture, Food and Tobacco Industry and Water Management, Belgrade, February, 2012, p.4*

**Vegetable growing.** Vegetables in Serbia grow on around 280.000 ha (9% of totally sowed areas) and in total value of agricultural production participate with 11,31%. In structure of vegetables production dominates a potato (potato mostly grows on the territory of Central Serbia – in Cacak, Ivanjica and Guca surroundings). The significant vegetable cultures are cabbage and pepper. The most famous place in Serbia after the cabbage production is Futog, while sauerkraut from Futog represents very important export product. Except on this location, big cabbage producers are located also in Central Serbia. The domestic market's needs for the cabbage is increasing from season to season, which classifies it among one of the most wanted vegetable products in Serbia. Two recognizable production and commercial centres for the pepper production in Serbia are Leskovac surroundings and north part of Vojvodina. Outermost north of Banat and a part of Backa fall into the most favourable terrains for production of spice red pepper in Europe. Although the vegetable production in cloches and greenhouses is still insufficiently represented, trends of production growth at the most vegetable cultures, as well as the positive balance of foreign trade exchange, point out to a profitable production.

**Fruit growing.** Very favourable climatic-edaphic conditions, as well as relief and terrain configuration in Serbia, provide a successful and diversified fruit production. The areas under orchards occupy around 240 000 hectares, or 4,7% of total agricultural areas. The highest percentage takes plum plantations (around 50% of totally fruits plantations), then apples and sour cherries. Of total areas under soft fruits, the plantations of raspberry are on 64%. Over 90% of areas under orchards are on the area of Central Serbia, i.e. in Zlatibor, Macva and Kolubara region. The highest production of raspberries is in North Serbia, of sour cherry in South Serbia, while apple and plum are grown on the entire Serbian territory. The fruit production realizes mostly on small parcels in individual sector, and this production has recorded the biggest growth in last decade. In the total value of agricultural production, the fruits production participates with 15,7%. A share of fruits and manufactured fruits export in total export value of agricultural-food products is around 15%. Mostly exports in the EU states, the countries of the CEFTA agreement and Russian Federation. The raspberry is the most profitable fruit kind in Serbia – it exports the most and realizes the highest export value. According to the FAO data (2008), Serbia is in the second place in the world regarding the raspberry production (in the first place is Russian Federation, and on third Poland) [5].

**Viticulture and wine production.** Serbia distinguishes by long tradition of grape and wine production, and the most of this production is realized on private family husbandries, within nine viticultural regions, sixteen sub-regions and 65 viticultural regions. The viticultural regions are characterized by extremely favourable and mutually different climatic and land conditions. During the long period (1955-2009) has been noticed a tendency of areas under grapevine decrease in Serbia, and it also refers to the total amount of produced grape. The areas under grapevine in Serbia, in 2009, were 58.000 ha (or 1,1% of the total agricultural area in Serbia), and average grape production in the period 2007-2009 was amounted 385 thousand tons. In previous assortment were mostly represented autochthonous sorts, which had worse quality in regard to the grape sorts in Europe and other countries.

Thanks to affirmative measures of the state increases a number of wine producers of wines with geographic origin, improves the production technology, eno-tourism, as well as the wine quality.

**Livestock production.** Meat production in Serbia has a long tradition, and this production is full of structural problems and records constantly negative trends for several decades. Mainly uncompetitive, the meat production will find itself in front of additional challenges, owing to forthcoming liberalization processes within the SAA and the WTO. Although Serbia is the biggest producer, exporter and consumer of all kinds of meat within the CEFTA countries, this production is still low in regard to the one in the EU countries. That is to say, livestock breeding in Serbia has characterized, for a long time, by significant stagnation in regard to major of European countries, which has manifested by low share of livestock units per a hectare of agricultural area and by low productivity in meat production.

Low percentage of livestock production shows underdevelopment in this sector of agriculture. The value of livestock production in agriculture value of some European countries amounts 50% -60%, like Denmark and the Netherlands [1]. Number of livestock can be seen in table 2.

**Table 2. Number of livestock (in 000 pcs)**

	2000	2003	2004	2005	2006	2007	2008	2009	2010	2011
Cattle	1.272	1.112	1.102	1.079	1.106	1.087	1.057	1.002	938	936
Cows and pregnant heifers	817	741	742	720	674	648	625	586	560	542
Pigs	4.066	3.634	3.439	3.165	3.999	3.832	3.594	3.631	3.489	3.287
Sows, pregnant gilts	887	825	692	654	685	550	502	477	519	485
sheep	1.611	1.516	1.586	1.576	1.556	1.606	1.605	1.504	1.475	1.460
Sheep for reproduction	1.233	1.133	1.157	1.169	1.167	1.192	1.198	1.149	1.131	1.117
Horses	37	24	26	25	20	18	16	14	14	11,5
Poultry	20.372	17.676	16.280	16.631	16.555	16.422	17.188	22.821	20.156	19.103

Source: *Agriculture in 2011 with foresseing for 2012 – evaluations, assessments and proposals, SCC, Association for Agriculture, Food and Tobacco Industry and Water Management, Belgrade, February, 2012, p.15*

A significant part of livestock production is in hands of small producers, with predominantly extensive production. The most of meat production realizes in family husbandries – goods producers with about ten bullocks, about hundred pigs and sheep or a thousand chickens in fattening. The market chain in meat production mostly has been unorganized and short, because most of livestock goes to the local/regional markets, often through “black” or unofficial channels of turnover.

**Dairy industry.** Milk production in Serbia is the one of the most important agricultural activities, which unites, as milk production, as well as the production of breeding and fattening material. This production significantly contributes to rural development (comprises more than 280 thousand of primary agricultural producers) and has very important role in the country’s food safety. Over 90% of totally produced milk is cow milk, while the rest is sheep and goat’s milk. About 50% of produced milk repurchases by the milk industry, while around 50% consumes in households or for making the traditional products, like cheese and cream (kaymak). Although in past several years, thanks to the MAFWM of RS support, directed to selection measures and new heads acquisition, has come to improvement of genetic composition of animals and increase of average milking capacity – the dairy sector has been characterized primarily by problem regarding monopolized market structure, as in repurchase of raw milk, as well as on the milk and dairy products retail market (so called, market oligopson situation). Such market structure significantly limits the primary agricultural producers regarding higher investments, more significant milk production, enlargement of livestock fund and improvement of raw milk quality. The milk exports mostly on the markets of the countries – signatories



of the CEFTA agreement, and export in the EU limit numerous factors, from insufficiently high milk quality, non-introduced quality standards, to low productivity and price incompetitiveness.

**Organic production.** There are natural conditions in Serbia for development of organic agriculture, which reflect in, primarily, unpolluted agricultural areas, as well as in existence of husbandries in mountain areas with encircled cycle of plant and livestock production. The organic production is becoming increasingly popular and economically more significant, while demand for certified organic products in the world constantly increases. The areas from which collect uncultivated plants and wild animal species from their natural habitats by organic production methods in the Republic of Serbia amount around 1.000.000 ha, while arable areas are significantly smaller and amount 600 hectares. The organic production is regulated by the Law on Organic Production and Organic Products, and control and certification in the organic production are entrusted to organizations for issuing certificates and re-certificates, authorized by the MAFWM of the Republic of Serbia. The organic agriculture has been based on essential connection between agriculture and nature, with an accent on natural balance estimation. Preconditions for stimulating export and improvement of social-economic position of rural environment and the national economy create by the organic production and supply of health-safety food.

**Carriers of the primary agricultural production: agricultural husbandries, enterprises, cooperatives.** According to the census of population, households and flats in 2002, in the Republic of Serbia was registered totally 778.891 **agricultural husbandries** (17,8% of these husbandries, according to income sources fall into agricultural, and 62,3% into non-agricultural husbandries). At the same time, according to the data of the Treasury Administration, until December 31<sup>st</sup> 2009 were registered 440.139 agricultural husbandries, and according to the data of the Republic Fund for Pension and Disability Insurance, in September 2010, the total number of agricultural pension users amounts 222.941 (right to use subsidies from agrarian budget since 2009 have only those agricultural producers who are insured at the republic Fund for Pension Insurance) [7].

Extremely high percentage of all agricultural funds is in ownership of family husbandries (82% of agricultural land, 91% of livestock unit). Instantaneously, there are a small number of development-oriented multifunctional husbandries and entrepreneurs which develop intensive primary agricultural production and follow-up activities in agricultural sector, which owe own investment capital, credit bonitet for encumbrance or/and entrepreneurial spirit and initiatives. The family (agricultural) husbandries are characterized by small and fragmented property – which causes that small percentage of husbandries fall into a category of goods producers: the production is mostly directed to satisfaction of own needs, and market surpluses are small and changeable (insecure) [2].

*Average size of totally used land per an agricultural husbandry* amounts 3,7 ha, and even 76,8% of husbandries own land up to 5 ha (the highest is share of husbandries which use land of 1-2 ha, 18,7% of them). According to the data of Life Standard Survey - LSS 2007, the average size of used land per a husbandry in Serbia amounts 4,93 ha, and husbandries with property smaller than 5 ha make 73% of the total number of surveyed agricultural husbandries [4]. In comparison with the EU-27, where the average size of agricultural land per a husbandry amounts 20,7 ha – shows the best a size of domestic property [2]. Big husbandries (over 10 ha) are mostly registered in South-Banat and South-Backa district, while the most of husbandries with medium property size (5-15 ha) is in Macva and South-Banat district.

*It is obvious that a number of agricultural husbandries decreases, which is parallel followed by their polarization by property size.* In accordance to the LSS data in 2002 and 2007, can be registered the following changes in structural characteristics of agricultural husbandries: 1) number of agricultural husbandries is decreasing; 2) also is decreasing a share of husbandries with small property (smaller than 5 ha) from 80% (2002) to 73% of the total agricultural husbandries number (2007), which can point out to ownership structure's polarization. Dual structure of farms (transformation of family farms in big commercial husbandries and enterprises) exists in north part

of the country (Vojvodina, Posavina (Sava region) and Podunavlje (Danube region)), where land market, and especially lease market are much more active.

The results of the LSS in 2007 *bring together poverty in rural areas and size of used agricultural land*: husbandries below the poverty line have an average size property of 3,3 ha, and above the poverty line 5,06 ha. At the same time, the results of mentioned survey point out that middle size husbandries (1-5 ha) have performances of semi-natural husbandries: rent out a little of land, have obsolete mechanization, far less than others use hired labour, and the market surpluses are not significantly higher than in husbandries with small property. Educational structure of rural population is low, and innovation capacity in production is very small.

**Agricultural enterprises.** The agricultural enterprises have based their business, in previous period, on size economy (business in factory-farm system), which has created the conditions for applying modern techniques and technology and setting up and development of seed production. As such, they were a stimulating factor for establishment and development of food industry in the same organizational frames of factory-farm type. The important part of food industry was privatized at the beginning of transition, and was, in organizational and ownership sense, separated from agricultural enterprises' structure. In this moment, the agricultural enterprises have unfavourable business performances and unfavourable results in regard to course and results of privatization. A number of agricultural enterprises: 1) have not yet finished the privatization process or the privatization was unsuccessful (new owners have not yet had a clear vision of enterprises development/enterprises in bankruptcy or insolvent), 2) a number of enterprises have transformed to state property, 3) regarding a number of privatized enterprises, new owners have great problems to keep a production profitability level, to service capital which origin from bank encumbrances and invest in development and strengthening of capacities.

**Agricultural cooperatives and other forms of agricultural producers' association.** Disunity of agricultural producers, their poor negotiating power in regard to purchasers, problems of placement<sup>5</sup> are the result of undeveloped agricultural cooperatives<sup>6</sup>, as well as the agricultural producers' association (major associations is only formally registered, have small membership and small size of business activities). Reasons for such state are numerous: 1) in agriculturer's character is expressed a tendency (affinity) for individual work and placement, 2) uncertainty of sale contracts and weak protection of proprietary rights – additionally affect the greater preferences to individual work, 3) underdeveloped legal groundwork for cooperative associations development and affirmation of association processes. For example, the Law on Associations was passed in 2009, and still waits to passing the new law on cooperatives. The existing law on Cooperatives has no full practical application, especially from the aspect of cooperative revision and sanctioning the cooperative which do not business according to cooperative principles (numerous private cooperatives). There are still controversial questions about cooperative property ownership, status changes (associations, annexations), investment policy and method of cooperative management (democracy principle limits higher investment activity of cooperatives). Successful business of cooperatives significantly limits a big percentage of black economy in repurchase courses, which leads to disloyal competition, as well as insufficient institutional organization of the market. Additional problems the agricultural cooperatives are facing with are: non-existence of fiscal policy measures and other forms of support to the cooperatives; impossibility of applying for credit resources; poor management capacities, etc.

**Associations of agricultural producers.** Agricultural cooperatives, agricultural producers' associations, clusters and other forms of agricultural producers' correlation – represent a significant factor of productivity improvement and competitiveness of Serbian agricultural production and rural development and, at the same time, represent a precondition of small and medium husbandries

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<sup>5</sup> Great number of agricultural producers who have no enough own production for big buyers' and hypermarkets' needs, and at the same time have great supply and heavy placement on the local market.

<sup>6</sup> Small number of cooperatives, which do business after cooperative principles, and great number of, so called, donors and private cooperatives, then "old" cooperatives, which still do business after public capital principles, where the employees run a cooperative.

survival in market terms of business. However, it is important to emphasize: 1) absence of the key laws practical applying in the field of agriculture, 2) substantially underdeveloped competition on repurchase market and agricultural products' retail market, 3) significant share of “black” economy in turnover courses – lead to a fact that agricultural producers still do not comprehend a real purpose and need of association.

Revitalization of agricultural cooperatives is the most suitable model for surpassing developmental restrictions of small husbandries, which dominate in Serbian agriculture. The cooperatives could contribute to the market stabilization, decrease of business risk for producers and more correct allocation of profit among all actors in the market chain of production and sale. Nevertheless, this role of the cooperatives is possible only under a condition of all previously mentioned systematic issues resolution in this field, where only partly problem resolution (through, for example, passing new law on cooperatives) will not lead to affirmation of agricultural cooperative association, i.e. it will not significantly change the current market position of the cooperatives.

## CONCLUSION

The agriculture represents one of the pillars of the Republic of Serbia economic development, and its significance for the national economy, besides economic, has also both social and ecological component. However, besides great potential in the sector of agricultural production, which has been a result of favourable climatic conditions, natural characteristics of land and available water resources, it has not been optimally used. Exactly owing to such potential, the agriculture in Serbia does not represent a common economic branch, considering that in all municipal and regional strategies it has been defined as one of development strategic directions.

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