Economic and regulatory evaluation of the organic agricultural production in Serbia: a case study of the production of wheat

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Abstract
Organic agriculture production has been recognized as the strategic chance and successful factor for economic development in many countries. Like in other economic areas, here it is also important to implement knowledge of resources economy, concept that include reducing costs wherever possible, managing resources of the enterprise rationally and efficiently and achieving higher value of profit. This paper presents the analysis of economic efficiency in organic agriculture on the example of wheat production and comparison between conventional and organic production. The methodology used in this paper includes measuring the indicators of economic efficiency, and comparative analysis of the calculation of profit in organic and conventional production. The aim was to point out elements of efficiency in organic production and to show that organic production, although still a controversial notion in underdeveloped countries can provide higher profit than conventional production. Besides, in the paper there have been analyzed legislations of the state providing better conditions for organic agricultural production and also possibilities for higher business success.

Keywords: Profit. Efficiency. Organic production. Conventional production. Legislation.

1. Introduction
The concept of sustainable agriculture is defined as the direction of agricultural development which should provide stable production of quality food and plant products for other technical purposes, while preserving the basic natural resources and energy, environmental protection, and the simultaneous economic efficiency – profitability (Kovačević, 2004, p. 354). Organic agriculture is based on the principles of health, ecology, fairness and care (www.ifoam.org).

The beginning of organic production in Serbia is linked to the seventies of the twentieth century (http://gain.fas.usda.gov). The first organized practice of organic production and consumption of food in Serbia is connected to the Association of Natural Food „Terra’s“, founded in 1990 in Subotica (Sudarević, Davčik, 2005, p. 79 - 86). The aim of this association from the foundation was to raise awareness of the need of using healthy food, the establishment of ecologically balanced production and sustainable development of economic entities in the field of organic food production.

For Serbia, the organic production is a concept that is still in its infancy and which is unknown to many people, both potential manufacturers and consumers. As in other areas of production here is also important to determine the efficiency of production. Namely, for the producer who has an interest to engage himself in this kind of production it is necessary to determine the profitability and return on necessary investment for starting the manufacturing process. Although some indicators such as productivity and yield (in units) worth more in conventional production, yield and productivity comparisons offer a limited, narrow, and often misleading picture of the different production systems. Profitability and long-term economic viability would be a better indicator for evaluating the benefits and limitations of a production system. Moreover, the multiple environmental benefits of organic farming, difficult to quantify in monetary terms, are essential ingredients in any comparison (Kilcher, 2007, p. 43). It is very important to pay attention to the process of production, because it can show all the features that make some users interested in an organic product.

2. Theoretical Approach

Organic agriculture has the potential (Kilcher, 2007, p. 32):

- to improve soil fertility, biodiversity and sustainability of agricultural production;
- to conserve natural resources;
• to improve agronomic and economic performance; to make yields more stable, especially in risk – prone tropical ecosystems; to achieve better food quality and food security;
• to provide access to attractive markets through certified products;
• to create new partnerships within the whole value chain as well as to strengthen self-confidence and autonomy of the farmers.

It can be stated that organic farmers preserve resources, produce more high quality products and generate more revenue, enable access to markets and create additional value, and that organic farming increases self – confidence and mobilizes new partnerships in business.

The foregoing is of great importance for determining the efficiency of organic production, because of the potential economic success, wider social benefits and environmental protection depend the commitment of the people for acceptance and implementation of organic agriculture. Namely, it can be given a few elements that speak in favour of this concept (Berber, Đokić, Kočić Vugdelija, 2010):

• Organic agriculture achieved more stable and better yields, and the market of food industry has a higher earning power through higher selling prices, and thus achieves greater economic benefit in the form of profits and long-term economic benefits. According to NGO „Terra’s“, earnings of organic agriculture was about 40 million Euros in 2007. As the demand on the world market increases, it can be expected that production in Serbia will affect economic strength and competitiveness of Serbian economy.

• Requires a higher participation of labour force, i.e. this kind of production can be very supportive in reducing unemployment in rural areas. Serbia has continued the trend of migration from villages to cities, so rural areas are economically underdeveloped and devastated. Potential of organic agriculture and its benefits can significantly boost the employment of labour and thus reduce the gap in living standards between cities and rural areas, and keep the population in agricultural areas of Serbia.

• The use of chemicals and conventional methods are replaced by organic methods and natural fertilizers and thus there are reduced pressures on natural resources, soil and ground water. Since there was no significant soil chemicals use in the long run, natural resources in Serbia are relatively well preserved, and organic...
agricultural production can largely preserve the quality and quantity of present resources.

Table 1. Organic (including “in conversion”) area in region 2007 – 2009

<table>
<thead>
<tr>
<th>Year</th>
<th>Indicator</th>
<th>Year</th>
<th>Indicator</th>
<th>Year</th>
<th>Indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>2009</td>
<td>AGRICULTURE</td>
<td>2008</td>
<td>AGRICULTURE</td>
</tr>
<tr>
<td></td>
<td>[ha]</td>
<td>organic</td>
<td>%</td>
<td>[ha]</td>
<td>organic</td>
</tr>
<tr>
<td>Albania</td>
<td>280</td>
<td>0,00%</td>
<td>280</td>
<td>0,00%</td>
<td>77</td>
</tr>
<tr>
<td>Bosnia and Herzegovina</td>
<td>580</td>
<td>0,03%</td>
<td>691</td>
<td>0,03%</td>
<td>691</td>
</tr>
<tr>
<td>Bulgaria</td>
<td>16.663</td>
<td>0,55%</td>
<td>16.663</td>
<td>0,55%</td>
<td>13.646</td>
</tr>
<tr>
<td>Croatia</td>
<td>14.194</td>
<td>1,10%</td>
<td>10.010</td>
<td>0,78%</td>
<td>7.561</td>
</tr>
<tr>
<td>Hungary</td>
<td>140.292</td>
<td>3,32%</td>
<td>122.270</td>
<td>2,89%</td>
<td>122.270</td>
</tr>
<tr>
<td>Macedonia, FYR</td>
<td>988</td>
<td>0,09%</td>
<td>3.380</td>
<td>0,32%</td>
<td>1.333</td>
</tr>
<tr>
<td>Montenegro</td>
<td>4.600</td>
<td>0,90%</td>
<td>1.876</td>
<td>0,37%</td>
<td>25.051</td>
</tr>
<tr>
<td>Romania</td>
<td>168.288</td>
<td>1,22%</td>
<td>140.132</td>
<td>1,02%</td>
<td>131.401</td>
</tr>
<tr>
<td>Slovenia</td>
<td>29.388</td>
<td>6,01%</td>
<td>29.838</td>
<td>6,10%</td>
<td>29.322</td>
</tr>
</tbody>
</table>

Source: http://www.organic-world.net/statistics-europe-production.html (date of access 30/01/2011)

Table 1 presents the organic area in region of Balkan, states near Serbia. According to data given in table, it is obvious that interest in organic production is rising in this region. From 2007 until 2009 the areas in hectares in organic agriculture have increased almost in all countries, except in Bosnia and Herzegovina and Montenegro. From 2008 until 2009 there have been some changes, so it was deducted decrease of this area in Bosnia and Herzegovina and Macedonia. The biggest increase was in Croatia, from 10.010 ha to 14.292 ha, Hungary from 122.816 ha to 140.292 ha, Romania from 140.132 ha to 168.288 ha. Of course, main increase was deducted in countries that are members of European Union, where organic agriculture is already implemented to a large extent (Njegić, Momčilović, Berber, 2011, p. 1278).

From the bellow (table 2) we can see that total area under the organic type of production (fully coverted and in the process of conversion) estimates about 2.290h. Main part of it is area in conversion, 2.240 ha and only 50 ha fully organic converted.
In the research made in 2011, in Serbia, attempt was made to evaluate the profitability of organic production in comparison with conventional type of production of soybean. This was made to determine whether organic type of agriculture is a development chance for Serbia. The research and analysis was conducted on domestic households which are under conventional and organic types of production in region of Vojvodina. Results obtained in this research showed far greater cost effectiveness of organic production, comparing to conventional one. Although there was a slight difference in initial investment, the fact is that Net Present Value calculated for organic production is 2.35 times higher indicates profitability of this type of production. That conclusion is further confirmed by much higher Benefit Cost Ratio in the case of organic production. Although the results have proved the benefit of organic production, they should be interpreted with certain caution. Data indicated that total costs for organic and conventional production are very similar. Usually it is expected for organic production costs to be significantly higher; therefore this could be a surprising result. The main differences in structure of costs between organic and conventional production are caused by high expenses for hoeing soil in case of organic production, contrary to fertilization costs in the case of conventional production. It has to be kept in mind that hoeing soil expenses are highly dependent on labour costs. Therefore, these costs can vary significantly.

### Table 2. Agricultural land organically certified by crop (2009) in Serbia

<table>
<thead>
<tr>
<th>Category</th>
<th>Crop</th>
<th>Area fully converted (ha)</th>
<th>Area in conversion (ha)</th>
<th>Total (ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perennials</td>
<td>Apples</td>
<td>650</td>
<td>550</td>
<td>1,200</td>
</tr>
<tr>
<td></td>
<td>Raspberries</td>
<td>360</td>
<td>20</td>
<td>380</td>
</tr>
<tr>
<td></td>
<td>Strawberries</td>
<td>80</td>
<td>10</td>
<td>90</td>
</tr>
<tr>
<td></td>
<td>Plums</td>
<td>420</td>
<td>170</td>
<td>590</td>
</tr>
<tr>
<td></td>
<td>Cherries</td>
<td>100</td>
<td>50</td>
<td>150</td>
</tr>
<tr>
<td></td>
<td>Others</td>
<td></td>
<td></td>
<td>2,560</td>
</tr>
<tr>
<td>Subtotal</td>
<td></td>
<td></td>
<td></td>
<td>4,970</td>
</tr>
<tr>
<td>Annuals</td>
<td>Maize</td>
<td>20</td>
<td>210</td>
<td>230</td>
</tr>
<tr>
<td></td>
<td>Wheat</td>
<td>40</td>
<td>130</td>
<td>170</td>
</tr>
<tr>
<td></td>
<td>Soybean</td>
<td>10</td>
<td>400</td>
<td>410</td>
</tr>
<tr>
<td></td>
<td>Vegetables and others</td>
<td></td>
<td>427</td>
<td></td>
</tr>
<tr>
<td>Subtotal</td>
<td></td>
<td></td>
<td></td>
<td>1,240</td>
</tr>
<tr>
<td>Grassland</td>
<td></td>
<td>50</td>
<td>2,240</td>
<td>2,290</td>
</tr>
</tbody>
</table>
from country to country. Also, empirical studies show that organic production yields can be lower. This fact must be taken into consideration in further research concerning profitability of organic production (Njegić, Momčilović, Berber).

Beside this research, one similar was made for coffee production in the state of Nepal. Namely, this research paper was written to an objective of examining the present condition of organic coffee farming in the rural mid-hill region of Nepal in the background of financial viability. The financial indicators showed economic profit and sustainable venture in income generation to the rural marginal people. The financial indicators administered were BCR, NPV, IRR (Internal rate of Return) and PP (Payback Period) and the value were 2.12 (at 12% opportunity cost of capital), 67763.58, 43.47 % and 6 year respectively. Sensitivity analysis to predict the evolution of the aforementioned indicators under various circumstances subjected to variability in output and input prices also was done. Farmers are experiencing soil conservation, better health and better livelihood (Lal Poudel, Sugimoto, Yamamoto, Nishiwaki, Kano, 2010, p. 123).

Also, one comprehensive analysis of the trends in costs and revenues of selected agricultural products grown and bred under the conditions of organic agriculture was made at 2006 in Prague. The analysis of the trends in revenues and costs is performed for the cattle breeding, beef cows and for the plant production of spelt, oat and potatoes. Costs are evaluated in the relationship with the direct and indirect costs. Revenues are traced with the help of per hectare yield, efficiency and market prices. Data of the selected file of the organically farming companies for the controlled commodities are compared with the same commodities of the selected file of the conventionally farming companies worked by the Research Institute of Agricultural Economics (RIAE) in Prague (Jansky, Živelova, Polačkova, Boudny, Redlichova, 2006, p. 436 – 444).

All those researches pointed out the importance of analyzing economic efficiency of organic agricultural production in comparison with conventional. According to above mentioned, authors stated aim and subject of the research and methodology.

3. **Aim and Subject of the Research**

The aim of this research was to present economic efficiency of organic production in function of economic success and regulatory framework for organic production in Serbia.
Subject of this paper is economic and legal analysis based on indicators of efficiency and the review of regulatory framework in Serbia for organic agricultural production.

The research was made to determine whether organic type of agriculture is a development chance for Serbia. The research and analysis was conducted on domestic households which are under conventional and organic types of production in region of Vojvodina.

4. Methodology

4.1. Methodology and data for economic analysis

The focus in achieving economic success in a market economy is on the rational use of production factors, capital use and speed of the flow of capital in the reproduction. The tendency is directed to accumulation for extended reproduction, constant investing and rational use of invested capital. Control of economic success is complete only if it is subjected to all kinds and forms of investment in reproduction (Jakovčević, 2007, p. 13).

Methodology used in this paper considered analytical instruments for measurement five most important indicators of production efficiency (see Table 3). Each indicator includes costs, and according to the analysis of breakeven point, profit and profit rate, economy, productivity and business risk it can be concluded whether organic production of wheat is more efficient than conventional production of the same crop. Of course, these measures do not represent the only way for decision making but they are definitively the most important and the most used in economic analysis of production efficiency. According to Matoškova (2004, p. 514), most of the potential competitiveness measures focus on monitoring and analysing various items such as price, production intensity, accessibility of certain production factors and production costs.
Table 3. Indicators of efficiency

<table>
<thead>
<tr>
<th>NUM.</th>
<th>INDICATOR OF EFFICIENCY</th>
<th>FORMULATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Breakeven point (in income)</td>
<td>[ \text{BEP} = \frac{\text{FC}}{%\text{Mp}} = \frac{\text{FC}}{\frac{\text{R}-\text{VC}}{\text{R}}} ]</td>
</tr>
<tr>
<td>2</td>
<td>Profit and Profit rate</td>
<td>[ \text{P} = \frac{\text{R}-\text{C}}{} \quad \text{p}' = \frac{\text{P}}{\text{R}} \times 100 ]</td>
</tr>
<tr>
<td>3</td>
<td>Economy</td>
<td>[ \text{E} = \frac{\text{R}}{\text{C}} ]</td>
</tr>
<tr>
<td>4</td>
<td>Productivity</td>
<td>[ \text{P} = \frac{\text{R}}{\text{L}} ]</td>
</tr>
<tr>
<td>5</td>
<td>Business leverage</td>
<td>[ \text{BL} = \frac{\text{Mp}}{\text{Op}} = \frac{\text{R-VC}}{\text{R-C}} ]</td>
</tr>
</tbody>
</table>

C – Total costs
VC – Variable costs
FC – Fixed costs
Mp – Gross margin
%Mp – Percentage of gross margin
Op – Operating profit
P – Profit
R – Revenue
p’ – Profit rate
BL – Business leverage
L – Labour force

4.2. Methodology for legal analysis

In the part of the paper related to the influence of the Republic of Serbia legislation on economic results in organic production, it has been done an analysis of the applicable provisions of the organic production in Serbia. Special attention is dedicated to the analysis of actual Law on Organic Production and to the comparison of the new legislative solution in regards to those which existed in past decade. Exhaustively are listed all previously used rulebooks and new uniform rulebook, and, also, it has been analysed Regulation on the use of incentive funds to support the development of organic production. By taking analysis of mentioned legislation, we tried to see what is the scope of the legislation of the Republic of Serbia on the development of organic production and whether legal regulation of organic production.
production have made a framework for achieving better economic results in this type of agriculture production.

5. Results

5.1. Results of economic analysis

As we mentioned, the data taken into consideration was found in two households in the region of Vojvodina, one from organic and one from conventional production of wheat (see Table 4).

The analysis was conducted on an area of 10 ha for each production type, in Srem, which is located in the south-western region of Vojvodina – the north-western part of Serbia.

Table 4. Data for analysis

<table>
<thead>
<tr>
<th>NUM</th>
<th>DATA</th>
<th>Unit</th>
<th>SYM</th>
<th>PRODUCTION ON HOUSEHOLD</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>ORGANIC</td>
</tr>
<tr>
<td>1</td>
<td>Revenue</td>
<td>€</td>
<td>R</td>
<td>11,400</td>
</tr>
<tr>
<td>2</td>
<td>Variable costs</td>
<td>€</td>
<td>VC</td>
<td>3,120</td>
</tr>
<tr>
<td>2.1</td>
<td>Seed</td>
<td>€</td>
<td></td>
<td>900</td>
</tr>
<tr>
<td>2.2</td>
<td>Plowing</td>
<td>€</td>
<td></td>
<td>850</td>
</tr>
<tr>
<td>2.3</td>
<td>Preparation for sowing</td>
<td>€</td>
<td></td>
<td>550</td>
</tr>
<tr>
<td>2.4</td>
<td>Sowing</td>
<td>€</td>
<td></td>
<td>170</td>
</tr>
<tr>
<td>2.5</td>
<td>Fertilization</td>
<td>€</td>
<td></td>
<td>-</td>
</tr>
<tr>
<td>2.6</td>
<td>Harvesting</td>
<td>€</td>
<td></td>
<td>500</td>
</tr>
<tr>
<td>2.7</td>
<td>Transport</td>
<td>€</td>
<td></td>
<td>150</td>
</tr>
<tr>
<td>3</td>
<td>Fixed costs</td>
<td>€</td>
<td>FC</td>
<td>900</td>
</tr>
<tr>
<td>4</td>
<td>Total costs</td>
<td>€</td>
<td>C</td>
<td>4020</td>
</tr>
<tr>
<td>5</td>
<td>Labour force</td>
<td>Num. of employees</td>
<td>L</td>
<td>6</td>
</tr>
<tr>
<td>6</td>
<td>Price of wheat</td>
<td>€</td>
<td>Sp</td>
<td>300</td>
</tr>
</tbody>
</table>

Source: Data from households and interview with producers

According to data collected at households in Vojvodina region, authors made economic analysis of efficiency with analytical instruments given in Table 3. The results of the economic analysis are given in Table 5.
Table 5. Efficiency of organic and conventional production of wheat

<table>
<thead>
<tr>
<th>NUM</th>
<th>INDICATOR OF EFFICIENCY</th>
<th>Unit</th>
<th>SYM</th>
<th>ORGANIC PRODUCTION</th>
<th>CONVENTIONAL PRODUCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Revenue</td>
<td>€</td>
<td>R</td>
<td>11,400</td>
<td>11,000</td>
</tr>
<tr>
<td>2</td>
<td>Variable costs</td>
<td>€</td>
<td>VC</td>
<td>3,120</td>
<td>4,708</td>
</tr>
<tr>
<td>3</td>
<td>Gross margin</td>
<td>€</td>
<td>Mp</td>
<td>8,280</td>
<td>6,292</td>
</tr>
<tr>
<td>4</td>
<td>Fixed costs</td>
<td>€</td>
<td>FC</td>
<td>900</td>
<td>600</td>
</tr>
<tr>
<td>5</td>
<td>Profit</td>
<td>€</td>
<td>P</td>
<td>7,380</td>
<td>5,692</td>
</tr>
<tr>
<td>6</td>
<td>Breakeven point</td>
<td>€</td>
<td>BEP</td>
<td>1,239,13</td>
<td>1,048,95</td>
</tr>
<tr>
<td>7</td>
<td>Profit rate</td>
<td>%</td>
<td>p'</td>
<td>64,74%</td>
<td>51,74%</td>
</tr>
<tr>
<td>8</td>
<td>Economy (Efficiency)</td>
<td>€</td>
<td>E</td>
<td>2,84</td>
<td>2,07</td>
</tr>
<tr>
<td>9</td>
<td>Productivity</td>
<td>ton/worker</td>
<td>P</td>
<td>6,33 t/worker</td>
<td>14,17 t/worker</td>
</tr>
<tr>
<td>10</td>
<td>Business leverage</td>
<td>ratio</td>
<td>BL</td>
<td>1,1219</td>
<td>1,1054</td>
</tr>
</tbody>
</table>

Source: Authors’ calculation and documents from households

According to the results of the efficiency analysis, organic production of wheat brings more revenue, and in this analysis that is 400 € more than conventional production of wheat. Namely, yield in conventional production is higher than in organic, but selling price is much higher in organic production. Since revenue is calculated as multiple of quantity and selling price, this indicator is higher in organic production by 3.5% than in conventional production. In this case, selling price (Sp), taken from the market, is 300 € for organic made wheat and 194 € for conventional made wheat.

Profit is also higher in organic than in conventional production of wheat. It estimates 7,380 € and it is 1,296 times higher than profit in conventional production, which was 5,692 €. Profit rate, as ratio between profit and revenue, showed that organic type of production is more efficient than conventional, in this case, with profit rate that is higher in organic production for 13%.

Efficiency is a partial indicator of quality of an economy, and it is determined as relation between revenue and costs (see Table 6). Quality of an economy increases when spent values decrease per unit of produced value. An increase in spent values per unit of produced value means decrease in quality of an economy. High level of achieved efficiency means high level of investment success in production processes in a company, i.e. income that is a condition for growth and development of a company. And vice versa, low level of
efficiency causes low or negative economic success that can be seen in production, income and profit decrease, which later affects other elements of business, such as market position and the like.

Table 6. Decision framework for efficiency analysis

<table>
<thead>
<tr>
<th>RELATION</th>
<th>SYMBOL</th>
<th>EXPLANATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>COSTS &gt; REVENUES</td>
<td>E &lt; 1</td>
<td>NON – EFFICIENT BUSINESS</td>
</tr>
<tr>
<td>COSTS = REVENUES</td>
<td>E = 1</td>
<td>EFFICIENT BUSINESS, INDIFERENCE</td>
</tr>
<tr>
<td>COSTS &lt; REVENUES</td>
<td>E &gt; 1</td>
<td>EFFICIENT BUSINESS</td>
</tr>
</tbody>
</table>

On certain household coefficient of efficiency is higher for organic production of wheat, it estimates 2.84, which means that revenue is 2.84 times higher than production costs. In conventional production this coefficient estimates 2.07 which is also good result, but in comparison to organic production it is lower.

Productivity as partial indicator of efficiency of an economy is very significant, but in this paper only the basic calculation has been done, as a ratio between total quantity of production and number of workers. This indicator has higher value in conventional production. Namely, revenue is similar, 11400 € and 11000 €, but selling price is far higher in organic production. According to data collected at households, revenue of 11.400 € is made as a result of 300 € per ton and 38 tons. In conventional production, selling price was 194 € per ton and quantity sold at market was 56.7 tons. This means that yield is higher in conventional production. Number of employees in organic type of production is higher than in conventional, 6:4, and this is also important factor when it is calculated the indicator of productivity. These findings are similar as Kilcher’s, who find that is more important to compare profit and long – term benefits instead of yield and productivity (2007).

Factor of business risks (business leverage) is determined from the ratio of gross margins and operating results. It shows how rapidly business result changes in comparison with gross margin. Since in the case of change of gross margin business results change faster, it is necessary to reduce business risk factor. In this case, factor of business risk factor is positive and it estimates 1.1219 for organic and 1.1054 for conventional production. These factors of business leverage are low, as they should be, near 0, because that means that business risk is reduced to minimum.
All indicators showed that organic type of production is more efficient and profitable, so in the future it can be expected higher engagement of producers. The increase of organic producers and land that is in process of organic treatment can also be explained by two factors:

- First, producers are interested in higher profit and earning power of organic agricultural production of wheat;
- Second, the state provides higher direct incentives (subsidies) for those producers who accept the principles of organic production – for crop production per hectare direct payments will amount to 30.000 dinars per hectare (about 300 €). For those producers that have production in process of conversion will get 36.000 dinars per hectare for crop production (about 360€).

5.2. The Influence of the regulatory framework on the economic result of organic agricultural production

Products made in the process of organic production improve life and health of people. These products are not harmful to the environment, enhance fertility and soil quality as well as water and air quality. Governments have recognized the necessity of expanding the area under organic production, arguing that it contributes to improving the quality of life.

The Republic of Serbia is one of the countries undertaking the activities whose aim is to encourage the development of organic production. In order to proceed with practical action in this field, first this form of agricultural activity ought to be legally regulated. In Serbia, the first provisions that regulated dealing with organic production were brought a decade ago, during the existence of the Federal Republic of Yugoslavia. In that period the Law on Organic Agriculture was passed (on June 30, 2000 in the Federal Parliament, and published in the Official Journal of the FRY, No. 28/00), and after the creation of the State Union of Serbia and Montenegro, and later the Republic of Serbia, had continued to be valid and enforceable in the Republic of Serbia until 2006, when the Republic of Serbia passed a new law. After the 2000 Law, in July 2006 Serbia enacted the Law on organic production and organic products (Official Gazette of RS, No. 62/06), which was in accordance with the valid regulations of the European Union, especially the year 1991 Council Regulation No. 2092/91 on organic production and agricultural products (OJ L 198, 22/7/1991), which is no longer in effect. Serbia soon accepted the changes in the regulation of organic production in the European

The aim of establishing a new legal framework in the EU is fulfilling the potential of organic production, which is the key element of agricultural and rural policy. In an attempt to comply with the regulations and goals set out in the EU, Serbia has expressed the intention to expand the area under organic production and to form a legal framework by adopting the 2010 Law, and this intention found its place in strategic documents, primarily in the National Agricultural Programme of Serbia 2010-2013, and in the National Action Plan for the Development of Organic Agriculture in Serbia 2010-2015. The National Action Plan for the Development of Organic Agriculture is conceived as a counterpart to the document the European Action Plan for Organic Food and Farming that exists in the EU. The ultimate goal in the development of organic production by 2014 was presented in the National Action Plan, which states that the total area under temporary organic production, regardless of the fact it is certified production or production during the conversion, reaches a volume of 50,000ha by 2014. According to some estimates, in Serbia, some form of organic farming is carried out on about 6,000ha, whereas in the period of conversion it stands at about 9,000ha, which totals about 15,000 ha. This is only 0.3% as opposed to the total cultivable area in Serbia which is 4.3 million hectares. In addition to this primary and ultimate goal, the Action Plan predicts the achievement of 12 other political objectives:

- Support for organic farming is an integral part of the national agricultural and rural development policy;
- Serbia has established a law on organic farming in accordance with eu requirements;
- Serbia has established an operational and effective conformity assessment and control system on organic farming in accordance with eu requirements;
- National association for organic farming is largely operational;
• Accessible and demand-oriented extension services provide qualified up-to-date support to organic farmers;
• Specific applied research activities for organic agriculture have been established;
• Organic agriculture will be included as a subject in formal education (long-term goal);
• An organic farming department in the rural development section within the ministry of agriculture (mafwn), will serve as a clusters for producers, processors, traders and cooperatives;
• The domestic market shall be further developed;
• Export promotion will be improved – serbian traders already being well established in export markets;
• Subsidised credit lines for farmers of organic agriculture will be set up;
• The implementation of the national action plan for the development of organic agriculture in serbia and its continuous adjustment shall be monitored.

By their implementation the Ministry of Agriculture, Trade, Forestry and Water Management attempts to improve the sector of organic agriculture.

Although the 2010 Law on Organic Production superseded previously existing law in Serbia after only three years and essentially has the same structure, the differences in the certain legal decisions are noticeable. Both the former and the new law, including the subordinate regulations, in detail deal with the issues concerning production, processing, storage, transportation, trade, labelling of organic products, etc. The new Law has thoroughly regulated the production of agricultural and other products made from organic production methods, objectives and principles of organic production, organic production methods, inspection and certification of organic production, processing, labelling, storage, transportation, trade, import and export of organic products, supervision of execution of delegated tasks and other issues of importance to organic production. The Law stipulates that the processing technology in organic production occurs without mixing the products from organic farming with the ingredients, substances and products from the conversion period, i.e. the products from conventional production, and without the use of ionizing radiation, genetically modified organisms and their derivatives. According the new Law, organic products will be stored and transported only in special rooms or vehicles, unless they are packaged and labelled. Likewise, they will be sold along with products from conventional production only if they are packed. The new Law enables the establishment of the Expert
Council for Organic Production, which is to discuss professional issues, provide expert opinions and participate in the implementation of project tasks in the field of organic production. Another change is that the activities related to organic production are conducted by a separate department in the Ministry of Agriculture - Directorate for National Reference Laboratories, where there is a section for organic production. Then, as opposed to earlier legal regulations, there is a different procedure for recognition of product certification of the imported goods.

According to the previous law, the recertification of the existing certificate was carried out, which was issued by the inspection body of the country of origin products. According to the new law, the inspection body issues the certificate for certified organic products which are exported stating that the product was produced in accordance with law and regulations made on the basis of the Law, after the control of documents and certificates occur. Therefore, recertification does not exist in practice any longer, but the confirmation as a document about the certification of imported products. The new Law contains more detailed provisions on the inspection bodies authorized to carry out certification of organic products. There is a provision that the Ministry of Agriculture will keep records in electronic form on the authorized inspection bodies and that Minister of Agriculture will revoke the authorization from inspection bodies to carry out control and certification of organic products if the authorized inspection body no longer meets the conditions for operating the control and certification of organic production. The operations of certifying organizations are controlled by inspectors for organic production from the Ministry of Agriculture, Trade, Forestry and Water Management. The new Law also stipulates the publication of a list of authorized inspection bodies in the Official Gazette of the Republic of Serbia. Currently Serbia has eight certifying organizations, which have been authorized by the Ministry of Agriculture, Trade, Forestry and Water Management of Republic of Serbia for the certification of organic production. The 2010 Law also states that the products produced in the process of organic farming are labelled with a national symbol and code of the inspection body that has done the certification of products.

However, a bit earlier in 2006 a national logo to indicate certified products were adopted (See Figure 1).
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According to the 2000 Law, the products of organic origin had a label YU – FOOD PRODUCTS FROM ORGANIC AGRICULTURE. Today, these products have a logo (the national symbol), modelled on the products of organic origin produced in the European Union, with the label ORGANIC PRODUCT. Agricultural products that are manufactured in production units that are in the conversion period are labelled with PRODUCT FROM CONVERSION PERIOD (see Figure 2).

Almost 90% of the products of organic origin, produced in Serbia, are exported, mainly to the EU market. In accordance with the 2010 Law, the Customs monitors exports of organic products through the customs declaration with the number of certificates received for the certain organic product. The new and previous law differ in determining sanctions for violation of prescribed norms. Namely, the new penalty provisions are more stringent than those that were previously valid. Now the minimum penalty for inspection bodies that do not act in accordance with the rules is 700,000 Serbian dinars (6,800 EUR), and the previous penalty was 7 times lower. In the same percentage, the penalty for producers of organic products that do not adhere to legal norms is increased so it can be interpreted as awareness of national authorities to adequately protect organic production.
After the Law on organic production and organic products was passed in 2006, the Minister of Agriculture brought six rulebooks, which were adopted in the late 2008. It is about subordinate regulations, of lower legal force, which are as the Law itself published in the Official Gazette of Republic of Serbia. These are:

- Rulebook on packaging, storage and transportation of organic products (Official Gazette of RS, No. 96/06);
- Rulebook on conditions to be met by a legal entity issuing the certification, or recertification for organic products and their issue (Official Gazette of RS, No. 81/06);
- Rulebook on the format of the label and the national symbol of organic products (Official Gazette of RS, No. 107/07);
- Rulebook on conditions and method of transport for organic products (Official Gazette of RS, No. 07/08);
- Rulebook on keeping records and the contents of the reports on which the records on organic production are kept (Official Gazette of RS, No. 14/08);
- Rulebook on the form of official identification of inspectors for organic production (Official Gazette of RS, No. 61/08).

Besides these rulebooks, great importance had The Rulebook on organic livestock production methods (Official Gazette of RS, No. 51/02).

In 2009, two more rulebooks were published, which are aligned with newly-brought regulations in the EU (Council Regulation No. 834/07 and Commission Regulation 889/08), and these are as follows:

1) Rulebook on industrial methods in the processing of products made from organic production methods, methods of cleaning and substances for cleaning production lines, permitted ingredients, additives and auxiliary substances in the processing of food (Official Gazette of RS, No. 34/09), which are required by technological procedures of the processing of products or raw materials obtained by methods of organic production, permitted ingredients of agricultural and non-agricultural origin and aids that are permitted to use in processing food for human and animal nutrition, except wine; and

2) Regulation on methods of organic crop production and gathering of wild plants and animals in natural habitats by organic production method (Official Gazette of RS, No. 47/09), which determines methods of organic crop production for the selection of species and varieties of plants, crop rotation, tillage, means and method of fertilization, soil fertility
maintenance system and method for combating plant diseases, pests and weeds, and gathering wild plants and animals in natural habitats by organic production method.

Ministry of Agriculture is 2011 made a uniform regulation: Regulation on the control and certification of organic production and organic production methods (Official Gazette RS, No. 48/11), which covers issues previously regulated by the current rules. After putting this new regulation in the use all previous stopped to be valid.

In addition to rulebooks, significant issues in organic agriculture are met in other subordinate acts, such as regulations. The 2010 Regulation on the use of incentive funds to support the development of organic production (Official Gazette RS, No. 33/10) had the greatest significance for organic production in 2010. This Regulation arranges the terms and conditions for the use of financial incentives to support the development of organic agriculture in 2010. The incentives are intended for the crop, vegetable, fruit and wine growing organic production, which can be carried out in the open, but also in closed areas (greenhouses). The right to use the mentioned subsidies is allowed to individuals as bearers of a commercial farm family, who are filed in the Farm Registry and who meet other requirements prescribed by regulation, then the companies, which are filed in the Register of economic entities to carry out economic activities, i.e. production agricultural and food products as a core activity, also along with meeting certain conditions, as well as cooperatives. Subsidies could be awarded not only to the owners of the land used for organic production, but also to tenants of the land, who carried out organic production. Incentives were paid to producers in order of submission, and it was planned to pay a total of 10 million Serbian dinars (97,000 Euros).

The legal importance for the regulation of organic farming subsidies in 2011 has The 2011. Regulation on the use of incentive funds to support the development of organic production (Official Gazette RS, No. 49/11) issued in July of 2011. From the budget of the Republic of Serbia in 2011 was allocated 20 million dinars for subsidizing organic production in Serbia (195,000 euros), double more than last year. In addition, the Ministry of Agriculture exactly intended money for financing plant and livestock production in organic conversion period. Subsidies that will be paid to producers whose production is in a period of conversion are greater than the amount paid for the production that already has organic status. This step could affect farmers involved in conventional production to decide easier to switch to the organic production because it will be subsidized in this transitional period, which is considered as a period in which a rule is not to expect financial returns. Promotion of organic
agriculture is an important factor for its expansion, but incentives can be decisive. Bearing this in mind, the Serbian authorities are trying to expand the amount of funds that will be set aside for organic production, and growth will be in accordance with the possibilities of the budget.

6. Conclusion

Main conclusions from these two analysis are:

- According to the results of the efficiency analysis, organic production of wheat brings more revenue, and in this analysis that is 400 € more than conventional. Since revenue is calculated as multiple of quantity and selling price, this indicator is higher in organic production by 3.5% than in conventional production.

- Profit is also higher in organic than in conventional production. It estimates 7.380 € and it is higher by 22.87% than profit in conventional production and profit rate is higher in organic production for 13%.

- On certain households coefficient of efficiency is higher for conventional production, it estimates 2.84, which means that revenue is 2.84 times higher than production costs. In conventional production this coefficient estimates 2.07 which is also good result, but in comparison to organic production it is lower.

- Productivity is higher in conventional type of production of wheat, as it was expected, since yield is higher in conventional type of production, and number of employees is lower. For conventional production of wheat productivity indicator was 14.17 and for organic 6.33. Although productivity indicator and yield are higher in conventional type of production, selling price is higher in organic production, so the revenue earned on the market is higher in organic type, and with similar structure of costs, earned profit is higher for organic producer of wheat in this case.

- Factor of business risk is positive and it estimates 1.1219 for organic and 1.1054 for conventional production. These factors of business leverage are low, as they should be, near 0, because that means that business risk is reduced to minimum.

- All indicators showed that organic type of production is more efficient and profitable, so in the future it can be expected higher engagement of producers.

In relation to regulatory framework, literature analysis has showed that Serbia is doing many preparations and actual work on promotion of organic production:
• All new regulations are made in accordance to EU regulative, and already implemented regulations are also changed to fit the EU regulations.

• To improve the export of organic products in the EU, enhance the process of certification of organic products.

• Serbia is also doing many activities to subsidize the organic production and amount of subsidies have increased every year.

At the end, it is also important to mention some concerns. Although the results in this analysis have proved the benefit of organic production in economic sense, they should be interpreted with certain caution. Namely, usually it is expected for organic production costs to be significantly higher; therefore this could be a surprising result. The main differences in structure of costs between organic and conventional production are caused by high expenses for hoeing soil in case of organic production, contrary to fertilization costs in the case of conventional production. It has to be kept in mind that hoeing soil expenses are highly dependent on labour costs. Therefore, these costs can vary significantly from country to country. Also, empirical studies show that organic production yields can be lower. This fact must be taken into consideration in further research concerning profitability of organic production. Since this was one case study on two households, it is important to make widespread research in the future with more households and in greater area. Also, it should be done the analysis of the influence of the costs on profit, like it was done for conventional production of soybean (Berber, 2010, p. 77 – 89) so that it could be analyzed which cost in cost structure of organic production is making the strongest influence on profit.

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