Economic Insights – Trends and Challenges	Vol. II (LXV) No. 1/2013	63 - 72

Investing in Raspberry Production as an Opportunity of Sustainable Development of Rural Areas in Western Serbia[1]

Zorica Sredojević*, Nataša Kljajić**, Nikola Popović*

*University of Belgrade, Faculty of Agriculture, Institute of Agroeconomy, Nemanjina 6, 11080 Belgrade-Zemun, Republic of Serbia
e-mail: zokas@agrif.bg.ac.rs, nikpop@agrif.bg.ac.rs

**Institute of Agricultural Economics, Belgrade, Volgina15, 11060, Belgrade, Republic of Serbia
e-mail: natasa_k@iep.bg.ac.rs

Abstract

The concept of rural development based on natural, socio-economic, demographic and cultural grounds, is increasingly dependent on the economic and social development. Given the above basis, in order to revitalize the sustainability of rural Serbia, it is necessary to make significant investment ventures by overriding the specifics of the area. Thus, raspberries, as one of the most important and potentially strategic product of Serbia, represent a feature of the rural development in western Serbia. Natural terrain, altitude and a host of other benefits provide opportunities for its successful cultivation. However, despite the significant effects reflected in this production, for its better profitability, the production potential of the area is not fully exploited. Raspberry is grown on small areas in the absence of irrigation measures, making it less effective. Therefore, the main objective of this study is to assess the potential and opportunities for investment that would support intense raspberry hydropower in order to revitalize the village of sustainable economic development at the local level, and thus increase the competitiveness of agriculture in Serbia.

Key words: *investment, raspberries, rural area of western Serbia, sustainability*

JEL Classification: *Q10, Q13, Q19*

Introduction

Serbia is one of the few countries of relatively small size, which is 88.407 km^2, from 5.09 to about million ha of agricultural land that provides favorable agro-ecological conditions for growing fruit trees (Milatović, 2011). Fruit growing has had a significant role in the economic development of Serbia. It is primarily food of exceptional nutritional value; it contains many healthy compounds. Fruit production contributes to the development of many other industries:

[1] The paper is part of the research projects number: 46 006: *Sustainable agriculture and rural development accomplishing the strategic objectives of the Republic of Serbia within the Danube region*, (an Integral and Interdisciplinary Research) 46.009 - Promotion and development of technological and hygienic processes in the production of foods of animal origin in order to obtain high-quality and safe products competitive on the world market and the 179.028 - Rural labor markets and rural economy of Serbia - the diversification of income and poverty reduction; funded by the Ministry of Education and Science of the Republic of Serbia, in the period 2011-2014

manufacturing, chemical, pharmaceutical etc., and service industries such as transportation, trade and tourism. Growing fruit trees also requires a commitment of a large number of workers, contributing to local jobs. Larger areas under fruit trees positively affect the microclimate and the sloping terrain prevents soil erosion, which reflects the biological characteristics that distinguish the period of cultivation (farming) and exploitation. During the plantation or cultivation period, exploitation occurs periodically, varying in intensity, thereby diminishing returns. Applied science in agriculture is intended to shorten the period of cultivation and extend exploitation, thereby achieving high quality, high yields, and becoming cost-effective (Sredojević, 1998, 2011). The assortment of raspberry in Serbia is dominated by the *Vilamet* with about 95%, followed by *Miker* with 3-4%, and by all the other sorts of 1-2% including *Tjulamin, Glen Empl*, and remontant variety *Polana, Polka, Heritidž, Otem Blis* etc. (Nikolić *et al*., 2007).

Raspberry is one of the most profitable fruit, but in order to achieve a favorable return several conditions must be fulfilled, namely: the proper selection of varieties according to the natural conditions in a particular locality, the optimal production technology, full-time, high-quality offerings, good roads and good transport means for transporting fresh fruits, close refrigerators, enough manpower and other processing facilities (Cecić 2006, 2008; Kljajić 2012).

Investment is suggested because there is a desire to increase the production volume, reduce operating costs, perform the work process more rationally, increase exports, and the like. Therefore, the ultimate goal is to increase the operating results of the entity and achieve greater difference between current revenues and expenses (Sredojević, 2009). The research in this paper is an attempt to examine the possibility of increasing investment in raspberries as one of the most strategically important products. Such investments may be, to a greater or lesser extent, able to provide rehabilitation, and thus to contribute to the sustainable development of some rural areas of Serbia.

Materials and Methods

This research was performed on the real economic model consisting of raspberry. Models are based on data of the experiment conducted during the three-year period in the western part of Serbia, in the municipality of Arilje. In doing so, we made a comparative analysis of investment in the production of raspberries considering two options: with or without irrigation. In addition, real data was used from the practice of the leading manufacturers of raspberry in this area. Moreover, we employed data from the statistical publications and other domestic and foreign literature.

The research methodology involves more calculation and statistical methods. The economic evaluation was performed, taking into account both the impact and return on investment in plantation and construction of irrigation systems, and the level of profitability. The results are presented in the final amount, tabulated and interpreted in accordance with the appropriate criteria for evaluation.

Results and Discussion

Raspberry production in the world

Raspberry production is mainly carried out in Europe (over 70%). In North America, raspberries are grown mainly in the U.S. and Canada (10,000 t / year), whereas in South America plan to extend their production. During the period 2002-2010 raspberries were grown at an average of 95.537 ha area of the world, while the average yield was of 487.065 tons, or 5.1 t / ha (Table 1).

Table 1. Surface area and volume average yield of raspberry in the world, 2002-2010

Years	2002	2003	2004	2005	2006	2007	2008	2009	2010	Average
Area Harvested (ha)	93,194	95,235	95,698	95,701	99,900	102,441	92,567	92,997	92,098	**95,537**
Yield (t/ha)	5.07	4.69	5.40	5.35	5.20	4.90	5.05	5.20	5.03	**5.10**
Production Quantity (t)	472,300	446,609	517,040	511,618	519,504	502,090	467,646	483,329	463,447	**487,065**

Source: *FAO Statistics, 2012*

Major producers of raspberries in the world are Russia, with an average production of 156.889 tons, followed by the Republic of Serbia with an average output of 84.633 tons, Poland with 62.715 tons, the USA with 55.772 tons, and the Ukraine, England, Canada, Mexico, Spain, France, Germany, Hungary, Bulgaria, Bosnia and Herzegovina. Average volumes of raspberry between 2002 and 2010 in some leading countries in the world are presented in Table 2.

Table 2. Raspberry production in leading countries of the world, 2002-2010 (t)

	2002	2003	2004	2005	2006	2007	2008	2009	2010	Average
Russian Federation	165,000	150,000	170,000	175,000	175,000	175,000	137,000	140,000	125,000	156,889
Serbia	94,366	79,471	91,725	84,331	79,680	76,991	84,299	86,961	83,870	84,633
Poland	44,874	42,941	56,800	60,000	52,539	56,391	81,552	81,778	87,556	62,715
United States of America	51,710	62,142	71,941	82,826	74,843	64,773	28,667	33,838	31,207	55,772
Ukraine	18,100	19,700	25,300	20,500	27,200	24,600	26,100	27,700	25,700	23,878
United Kingdom	7,300	8,500	10,000	12,200	12,220	14,800	15,500	15,300	17,000	12,536
Canada	14,880	14,236	13,828	14,152	12,442	11,517	11,825	12,607	11,864	13,039
Mexico	2,046	2,249	3,045	5,044	9,351	11,477	14,726	13,559	14,343	8,427
Spain	4,500	5,029	6,000	7,000	7,500	10,000	12,000	12,000	10,000	8,225
France	7,971	6,830	6,875	5,742	6,274	5,716	6,219	7,368	6,406	6,600
Germany	29,700	20,000	20,034	7,000	7,196	6,191	5,334	5,068	5,212	11,748
Hungary	9,847	9,258	8,470	6,724	11,900	6,166	6,304	4,967	3,184	7,424
Bulgaria	3,938	4,083	5,606	3,900	5,766	3,711	3,540	3,510	6,109	4,463
Bosnia and Herzegovina	2,500	1,719	1,700	1,289	6,452	8,032	7,483	8,487	7,937	5,067

Source: *FAO Statistics, 2012*

On the European continent, where we find an increased production, for the same period, raspberries were grown on 83.028 ha and the average yield was of 397.708 tons, which represents 4.80 t / ha (Table 3).

Table 3. Raspberry productions in Europe, 2002-2010

Years	2002	2003	2004	2005	2006	2007	2008	2009	2010	Average
Area Harvested (ha	81,769	83,221	83,512	82,591	85,607	88,806	80,459	81,067	80,216	83,028
Yield (t/ha)	4.87	4.33	4.97	4.80	4.74	4.54	4.96	5.06	4.89	4.80
Production Quantity (t)	398,181	360,107	414,716	396,339	405,514	402,885	399,302	409,815	392,513	397,708

Source: FAO Statistics, 2012

Raspberry production in Serbia

In Serbia, raspberries have been grown since 1880, first as ornamental plants, and since 1920 as commodities. Production reached a large volume at the end of the twentieth century, and today, the largest production is concentrated in the western part of central Serbia and in the following

municipalities: Valjevo, Osečina Arilje, Krupanj, Bruce, FC, Mionica Lučani, Bjelovar, Guca, Kosjerić. According to statistics, between 2002 and 2010, raspberries were grown in Serbia on an average of 15,000 ha, managing to produce about 84.000 tons of fresh raspberries with an average yield of 5.5 t/ha (Table 4).

Table 4. Surface, the average yield and production volume of raspberry in Serbia, 2002-2010

Years	2002	2003	2004	2005	2006	2007	2008	2009	2010	Average
Area Harvested (ha)	15,338	16,421	15,995	16,500	15,024	14,496	14,680	14,957	15,171	15,398
Yield (t/ha)	6.15	4.84	5.73	5.11	5.30	5.31	5,74	5,81	5,53	5,5
Production Quantity (t)	94,366	79,471	91,725	84,331	79,680	76,991	84,299	86,961	83,870	84,633

Source: *FAO Statistics, 2012*

Raspberry production in Serbia depends on the optimal climate, soil and water conditions (Veljkovic et al., 2009). The climate is temperate continental and the soil types are fine for growing raspberries. Water resources in Serbia are satisfactory, but due to irrigation, water flows are still underutilized.

Specifics of the regions in Serbia and possibilities for growing raspberry

There are plenty of strong arguments in favor of creating the conditions for greater representation of organic agricultural production in Serbia. The country has natural resources, both down the plains and up in the mountains, which can meet the requirements for the establishment of long-term organic agriculture. Then, there are social reasons that are reflected in the steadily rising unemployment, increasing poverty, migration to cities etc. The introduction of organic farming in Serbia is a long-term requirement for the production of valuable biological products with a view to protecting both the environment and human health. Let's have a look at the specifics, also sorted according to altitude (from the lowlands to the highlands), given the generally characteristics of individual queen of Serbia.

The first region includes Vojvodina and Macva. This region is home to more than 1.5 million people, or about 37% of the total population of rural Serbia. This is a region with a well-developed economy, good infrastructure and related with large centers - Belgrade and Novi Sad. Therefore, it appeals to the younger population coming from remote areas, and the age structure is more favorable compared to other rural regions. Although, as a result, employment in the tertiary sector is high, about a third of the employed population still works in agriculture. About one-third of households in Serbia, whose size is greater than 10 ha, is located in this region. Organic food production in this region has been present since the early 90's.

The second region includes parts of central Serbia, Sumadija, part Mačve and Stig. About 15% of the total population in Serbia is living in the territory. Despite the fact that the average population density is better than in other rural areas, the problem is the high rate of population aging. Compared with Vojvodina, the region is characterized by a larger number of mixed farms and fewer non-farm households. In this area, there are more holdings of 3 hectares and quite a small number of farms of over 10 ha. Representation of primary production is about 33%, lower than other rural areas of central Serbia. The agricultural production is dominated by vegetables, fruits and livestock. In addition to agriculture, chemical and food processing, machinery, and textile industries have an important role.

Agricultural land covers 64% of the total territory, and although the relationship between labor and capital is less favorable than in Vojvodina, productivity is higher than in other rural areas of central Serbia. About 60% of arable land is used for the production of corn, which is almost

entirely used for livestock feed. About 24% of cattle and as many as 30% of the total production of sheep in Serbia take place in this region. The main or only ordinary income households are engaged in cattle breeding and deal with smaller farms, obtaining revenue from the sale of milk. Given that the total area under orchards in Serbia represented 30% of the region, traditionally a significant part of its revenue comes from the production of fruits and grapes. The food industry is well developed as well, but it is dominated by slaughterhouses, factories for processing fruits and vegetables, mills and dairies. From the total number of farms oriented towards organic production in Serbia (317), more than 160 are placed in this region, and this number is steadily increasing. This rural area is increasingly gaining in importance.

The third region includes the east, south and west of Serbia with rural areas of 42% of the total territory of Serbia, and it is generally characterized by abandoned land potential, shortages of labor, unorganized market and lack of services for specific regions. This area has 20% of the population of Serbia, but the average population density is the lowest compared to other rural areas. Every third resident adults have not completed primary education, the employment rate is the most disadvantaged in the country, with more than 35% of the employed population working particularly in agriculture and mining. Realized gross domestic product per capita represents only 53% of the national gross domestic product, and given the high share of primary sectors, the region formed nearly 19% of GDP primary sector of Serbia. However, as regards the national domestic product of the secondary sectors, the region is represented by only 10%. Agricultural areas make up 55% of the territory, but low productivity is due to modest investment holdings and equipment.

The specificity of this region has a high percentage of unused land, especially in the southeastern part due to unfavorable age structure of the population, lack of adequate machinery, unavailability of land, and poor soil quality. Besides wheat, the major vegetable production connects to growing raspberries in the forefront Zlatibor District, which deviates from the average cattle breeding in the region, and Raška district includes the largest sheep breeding in the country. Although the region has the greatest potential for tourism in Serbia, where some destinations like Zlatibor, Kopaonik, the Vrnjačke Spa or Guče make up over 60% of the turnover of the national tourism, infrastructure problems are not solved, cause continuous depopulation of the region, engendering its economic marginalization and rural poverty. This is particularly prominent in southeastern Serbia. Therefore, it is necessary to develop some other activity outside the primary agricultural production in order to achieve the revitalization of the village.

The district is under certain angle, with intersected, rivers, streams and with special relief, climate, vegetation, flora and fauna and the largest forest, water and mineral resources. The dominant production in this area is farming. Transport and road networks are poorly developed in addition to the small goods, and limited retail market. A special feature of this area is the depopulation of villages, where almost all the municipalities are affected by depopulation. Living in the mountainous areas is still in progress. This area of natural beauty, also offering winter sports opportunities, is very suitable for tourism development. In addition, the rural areas, the market providing food, fruit, wood products, the extractive industry and handicrafts are all places for vacation, tourism and life. There is a causal relationship between the production of organic products and rural development. This is demonstrated, on the one hand, at the micro scale, at the company level. On the other hand, there is a general macroeconomic and social dimension. This region belongs to the municipality Arilje. It is located in the western part of Serbia, and belongs to the Zlatibor District. It covers an area of 349 km and an altitude of 330 to 1.382 m, thereby being very suitable for growing raspberries (Cecić 2007b, Kljajić 2012).

Economic analysis of investment in the production of raspberry

Starting from real concrete data collected in the field on the basis of scientific research and experimental results for three consecutive years, monitoring raspberry conditions with and

without irrigation after this period as well, for the purposes of this research we have developed a real economic model of raising crops and raspberry production in different conditions and in rain fed conditions, i.e. without irrigation - *variant I* and in terms of alternative irrigation water regime, i.e. the application of irrigation - *variant II.*

In variant II, an additional item refers to investments in irrigation and to "drop by drop". Irrigation system is adapted to land and plantation and its value is taken to the real average of the market. Cultivated varieties of raspberry are ” standard” Willamette (conventional) with vertical gauntlet, and now rising with the planting distances 2.50 x 0.25 m. The required number of seedlings in an area of 1 ha with the specified spacing is 16.000; purchase price is 0.25 € seedlings, raising crops period is of two years and gender small or low yield occurs in the second year after planting; period of operation is planned for 15 years, with a growing period of fertility for 3 years, the period of full cropping period of 7 years and 5 years declining fertility; calculative interest rate is 8%, and final liquidation value is ignored for now, that is ≈ 0th for the planned volume produced raspberries safe placement.

Purchase (sale) price of raspberries is planned in the amount of 1.5 €. Initial assumptions in the preparation of an economic model of raising raspberry from both variants are as follows:

- climatic conditions and soil locations for growing raspberries are appropriate;
- raspberries are grown on an area of 1 ha;
- the manufacturer has the necessary machinery for the works in raspberry production - small tractor, trailers, accessories for spraying and the like;
- manpower needs working during “rush hour”;
- the manufacturer can provide temporary hiring (seasonal) workers.

The organizational and economic problem in this case is solved by assembling investment calculations determined by: the upper limit of investment; level of invested capital; economic feasibility of increasing the capacity of existing or purchase new investments, the lowest selling price of the product obtained using appropriate investment in a given production conditions; economic efficiency of production, and others[2].

For the purposes of this research, we applied a dynamic model of investment calculation that includes all cash receipts and payments during the investment period and in this case the time period over accrued interest has a significant impact on the economic results obtained from the investment. The dynamic model of investment calculations are based on the ratio of the sum of all cash receipts that were realized over the period of an investment or (b_1, b_2, b_3, … , b_n) and issuance of cash generated (A_0, a_1, a_2, a_3,...a_n) during the acquisition and use of an investment property, discounted by a certain calculative interest in the same moment calculation, usually at the beginning of the investment period.

Annual cash receipts from raspberry exploitation were obtained by multiplying the quantity of the planned or actual yield to their market prices. On the other hand, there are annual cash issues for production in a raspberry plantation (the necessary material - for tillage, fertilization, protection of crops from pests and diseases, the packaging for the planned offering, remuneration of workers and machinery operation and others), maintenance facilities in the plantation - backrest, roads, buildings etc. The end (liquidation) value of perennial plants (B_n) represents the value of timber felled trees and the like, less the costs of logging and deforestation. This value is translated, i.e. discounted using compound interest at the moment when plantations end. The final value ignores (i.e. is equal to zero, i.e. $B_n = 0$) raspberry that does not have a specific volume of wood, while the stems (shrubs) have a common known use value.

As noted above, the period of exploitation of raspberry is planned for 15 years based on empirical data from the field and with the cooperation of experts in fruit and planned yields, for

[2] www.agrobiznis.net, 2011, Kljajić 2012

each year of operation raspberries. In the same way, the projected yield curve reflects plantation life, as a means of life which is biologically determined.

According to projected yields by year, ascending, descending and full cropping plantations, with the application of the purchase price of 1.5 € / ha at planting breeding model of vertical espalier, it is calculated the amount of annual cash income. The annual cash rent is determined according to the invoice of material consumption, labor workers and machinery functioning according to the plan and technological map for some years during the planting operation. Calculation of economic efficiency, the use of dynamic investment calculations are performed by calculations based on the level of variable costs.

Comparative analysis of the profitability of investment in different conditions of raspberry

Based on the model consisting of investment in different conditions of raspberry, i.e. in conditions without irrigation - a variant in terms of application and irrigation - version II, established the economic and financial evaluation of investment per variant. By individual variations were observed parameters and investment calculations: total investment in plantation raspberry; averages of annual cash income, average annual cash costs of issuance costs average annual net benefits; final value crops, the average annual cost of raising and plantation exploitation. All these parametric given values were based on projected yield of raspberries for period of 15 years. Parameters investment calculations and data determined by individual variants are given in the final amount in Table 5.

Table 5. Parameters investment calculations to assess the economic efficiency of raspberry on the surface of 1 ha

Parameters of investment calculations		Amount	
		Variant I	Variant II
A_0	Total investment assets (€)	8,250	12,140
b	The average annual income (€)	9,650	14,140
a	Average annual issuance (€)	6,482	8,844
k	The average of clean annual benefit (€)	3,168	5,296
B_n	The end (liquidation) value (€)	0	0
t	The average annual cost of raising and plantation exploitation (€)	7,446	10,262
n	Plantation exploitation period (years)	15	15
i	Calculative interest rate (%)	8	8

Source: Calculations by authors

Parameters investment calculations for the application of dynamic economic indicators and determining effective investments are considered by some variants (I and II). It was made the analysis and evaluation of the economic feasibility of investment for each option, and then variants were compared. Other important dynamic investment calculations methods used in practice and applied in this study are: Method of yield value crops such as investments (determined by the maximum amount of funds that could be invested in plantation), the capital value of planting method (determined by the amount of change financial results during the plantation exploitation), internal rate of return (determined level of financial resources invested in raising crops and use); Identifying the relationship between average annual income of the plantation, as investments and incurred average annual cost of raising and plantation exploitation; period method (date) return of investment (from the difference of annual cash receipts and cash issuance, shall be the shortest period of time for which they can recover the

funds planned to invest in plantation), and accounting torque efficiency indicators, taken by raising period (breeding), or beginning operation period of raspberry.

Economic analysis showed that investments in different conditions of raspberry, with both variants (with or without irrigation), cost-effective achieve significant gains compared to the invested capital (Table 6). However, in the second variant, investing is much more cost-effective compared to the first, although the investment in variant II increased by 32% due to significantly higher yields under irrigation, nepotism in higher value production, and therefore the profit per unit area.

By investing in variant II, it is achieved about 42% higher capital (net present) value in addition to variant I. From the series of realized net annual benefits, while opting for variant II, invested capital can be recovered in the third year of regular production of raspberries, while in the case of variant I, this is achieved by the fourth year of production. The degree of capital with variant II was 42.81%, while with variant I was lower, that is 39.86%. In addition, the absolute and relative indicators show better investment efficiency in variant II. In variant II, with every euro, the invested capital reaches about € 2.73 accumulation (€ 33,188.00: € 12,140.00 = 2.73), and in variant I, that amount is lower € 2.29 (18 866, € 00: € 8,250.00 = 2.29). Also, the difference between average earnings and average annual cost of raising and plantation exploitation in variant II was increased by € 1,674.00, and the relationship between these two indicators is advantageous to 0.1 in relation to variant I.

Table 6. Indicators of economic effectiveness of raspberry on the surface of 1 ha

Indicators of economic efficiency		**A m o u n t**	
		Variant I	**Variant II**
Co	The capital value (€)	18,866	33,192
Po	Production value (€)	27,116	45,332
an (Co)	Annuity of profit (€)	2,205	3,877
an (Ao)	Annuity of investments (€)	964	1,418
an (k)	Annuity of clean annual benefit (€)	370	619
(b-t)	The difference in average annual earnings and average annual cost of raising and plantation exploitation (€)	2,204	3,878
(b/t)	Ratio of average annual earnings and average annual cost of raising and plantation exploitation	1.30	1.40
n_a	Period of return of investment (years)	3.16	2.80
i_e	Internal rate of return (%)	39.86	42.81

Source: Calculations by authors

From an economic and financial point of view, investing in both cases depends on a number of factors. Thus, for example, calculating the increasing interest rates reduces the value of the capital value. In the analyzed model for a period of 15 years at the calculative interest rate of 4%, the capital value of raspberry is € 26,973.00, at a rate of 8%, the value of capital is € 18,866.00 and further increasing the rate to 22%, the capital value is reduced to € 5,420.00. Also, if the return on investment achieved in a short time compared to the period of operation, efficiency is reflected in the increased plantings. Numerous risks, market conditions, the purchase (sale) price of raspberries, parity inputs and outputs etc., greatly affect the profitability of investing in this production (Sredojević 1998, Kljajić 2012).

In addition to economic appraisal and financial indicators show that investment in both variants acceptable provides good opportunity for crafts and capital accumulation. Under the same conditions, the financing methods also provide greater financial security to invest in variant II. Although the investment in the variant II is burdened with additional investment in irrigation

system, annuity payments from a clean used annually in raspberry production, it remains a larger amount of capital accumulation to variant I. Thus, although the production season in our country takes place in rather fragmented plots, usually less than 1 ha with a small portion of irrigation, research shows that it would be profitable to invest in new planting areas of 1 ha or in the irrigation systems.

Conclusion

The production season is a good chance for the development of the agriculture and economy of Serbia. Increased economic efficiency of raspberries can be achieved from its primary production, as well as its processing and improved product quality. The economic importance of raspberry consists in: a relatively large amount of profit per unit of invested capital and labor, reducing unemployment in much of the Republic of Serbia, better economic development by building and expanding the capacity of the food industry, an indirect influence on the development of related industrial activities, significant net foreign exchange effect, and particular importance for allocating storage infrastructure (particularly local roads) as a precondition for the overall socio-economic development.

The profitability of investing in raspberries depends on several factors. First of all, market conditions, the purchase (sale) price of raspberries, then parity of inputs and outputs etc., to a large extent, may affect the profitability of the investment. Likewise, if the investor borrows funds, the interest rate and repayment period of capital have an impact on the efficiency of investment. In terms of rapid changes in market prices and higher inflation creates uncertainty for business loan capital. So, if you borrow capital (loan etc.), you should also strive to increase the share of your own operations and reduce the share of borrowed capital amount. Since this is a long investment period, the weather, errors or omissions made in the raising period must be taken into account, as it will be impossible or difficult later in the regular exploitation of plantations. In order to achieve a favorable return on investment, and therefore financial security, before growing raspberry, you need to envisage all possible risks that can be, to a greater or lesser degree, avoided or mitigated.

Certainly, from an economic and financial point of view, investing in both options is subject to numerous risks. However, version II requires higher investments and therefore the higher the risk of investment. Economic and financial analysis shows that, despite the higher investments in variant II for procurement and installation of irrigation systems, based on all indicators, investments in variant II are far more efficient compared to variant I. One of the key ways to improve the efficiency and profitability of investments in raspberry production in Serbia is land consolidation, and consequently, greater use of irrigation. Given the natural advantages for growing raspberries in Serbia and export orientation of the product, as well as increasing the intention to declare raspberries a strategic product, it is necessary that agricultural policy makers, through measures of support to producers, boost profitability of investments in this production.

References

1. C e c i ć, N., M i l i v o j e v i ć, J., A r s i ć, S., *Ekonomičnost ulaganja u sistem za navodnjavanje u klimatskim uslovima ariljskog malinogorja,* Ekonomika poljoprivrede, IEP, 2006, br. 3, p. 809-821.
2. C e c i ć, N., S u b i ć, J., V u k o v i ć, P., *Proizvodnja maline u funkciji ruralnog razvoja*, Tematski zbornik-Multifunkcionalna poljoprivreda i ruralni razvoj u Republici Srpskoj, IEP, 2007, p. 379-386.
3. C e c i ć N., *Optimalni režim navodnjavanja aluvijalnog zemljišta kapanjem pod malinom u Ariljskom malinogorju*. Magistarska teza. Univerzitet u Beogradu. Poljoprivredni fakultet, Zemun, 2007.

4. C e c i ć, N., V u k o v i ć, P., A r s i ć, S., *Basic Characteristics of the Alluvial Soil of the Experimental Field „Kosovo“ in the Productive Planted Raspberry,* Tematic Proceedings-State, Possibilities and Perspectives of Rural Development on Area of Huge Open-pit Minings, IEP, Belgrade, 2008, p. 357-367.
5. DAI-USAID Agrobusiness Project, *Economic analisysis of production, processing and sale of sweet and sour cherry in Serbia*, 2011, www.agrobiznis.net, date of accesion, 20.11.2012.
6. K l j a j i ć, N., *Ekonomska efikasnost investicija u različitim uslovima proizvodnje maline*, Doktorska disertacija, Univerzitet u Novom Sadu, Poljoprivredni fakultet, 2012.
7. FAOSTAT, http://faostat.fao.org. date of accession, 04.11.2012.
8. M i l a t o v i ć, D., N i k o l i ć, M., M i l e t i ć, N., *Trešnja i višnja*, Naučno voćarsko društvo Srbije, Čačak, 2011.
9. N i k o l i ć, M., *Tehnologija gajenja i sortiment maline i kupine,* Biljni lekar, 2012, 40(2-3):15-43.
10. Republic Statistical Office of Serbia, Database Agricultural Statistics, *Statistical Yearbook of the Republic of Serbia*, http://webrzs.stat.gov.rs/, date of accession, 07.11.2012.
11. S r e d o j e v i ć, Z., *Procena vrednosti višegodišnjih zasada*, DAEJ i Ekonomski fakultet, Beograd, 1998.
12. S r e d o j e v i ć, Z., S u b i ć, J., J e l o č n i k, M., *Possibilities of rationalization of perennial plantation establishement,* Petroleum– Gas University of Ploesti, BULLETIN, Economic Sciences Series, , Vol. LXI, $N_0$2, Romania, 2009, p. 22-28.
13. S r e d o j e v i ć, Z., *Ekonomska evaluacija proizvodnje trešnje i višnje u Srbiji,* Zbornik radova III savetovanja Inovacije u voćarstvu - Unapređenje proizvodnje trešnje i višnje, Poljoprivredni fakultet, Beograd, 2011, p. 5-20.
14. S r e d o j e v i ć, Z., M i l i c, D., J e l o c n i k, M., *Investment in Sweet and Sour Cherry Production and New Processing Programs in terms of Serbian Agriculture Competitiveness,* Petroleum–Gas University of Ploesti, BULLETIN, Economic Sciences Series, Romania, 2011, Vol. LXIII, $N_0$3, p. 37-49.
15. V e l j k o v i ć, B., M i l o š e v i ć, T., G l i š i ć, I., P a u n o v i ć, G., *Some aspects of apricot production in Serbia,* Acta Agriculturae Serbica, 2009, 14: 83-89.