

Economic Adequacy of Blackberry Production in Rural Areas of Sirinić District

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Abstract

In Sirinićka District, blackberries are mostly grown on smaller farms in highlands, where the best results are reached. However, the demands for this type of berries as well as the interest in its cultivation have steadily increased, recently. Thus, the main goal of this paper was to present the results of an economic analysis of blackberry production with the data obtained during the two years of monitoring a group of farmers in that area. It has been estimated and presented the profitability based on present marketing, agroclimatic and technological conditions and also the slightest blackberry yield achieved in the group of growers. According to the results of the economic analysis of blackberry growing, it can be concluded that production generates income, even with one third of yield potential. Cost-effectiveness in blackberry growing is 2.14. Depending of the investments in blackberry growing, profitability rate is 53.39%. These calculations show the advantages of blackberry growing in Sirinićka District, comparing to other fruits.

Key words: investments, costs, calculations, economic impact

Introduction

Sirinić District covers an area of 250 km², including one urban and fifteen rural settlements. It is a jagged mountain region with variable altitude, ranging from 500 m in the Lepenac river valley to 2500 meters above sea level, measured on the highest mountain peak Ljuboten. Agricultural production of Sirinić District in its largest part lags behind real opportunities determined by agro-ecological conditions. Vegetal husbandry is the most dominant agricultural sector, but there also exist good conditions for fruit production, especially for production of berries (raspberries, blackberries, blueberries). Agro-ecological conditions in Sirinić District enable better quality of the blackberry fruit and higher yield per unit area than in most other countries in which larger quantities of this berry type are being produced. Years of experience from different regions of the Republic of Serbia indicate that (in favorable agro-ecological conditions) the production of blackberries is more profitable than other branches and lines of agricultural production. In Sirinić District, blackberries are mainly grown on smaller properties ranging from 10 to 30 a, in highland area where the best results are being achieved. All the parcels are located in proximity to the built refrigerator storehouse and linked with asphalt/macadam roads. This enables convenient and cheaper transport of production supplies, packaging and of blackberry fruits without quality diminishing. The commitment to invest in blackberry production stems from the fact that there exist good climatic and other conditions necessary for this type of production in rural areas of Sirinić District. Experiences so far have shown that the production is very profitable and that demand exceeds supply. The organization of redemption is stable; there are buyers who for many years organize collection and freezing of the fruits. Investing in this type of production is an ideal investment and it represents a good revenue to mixed agricultural holdings in the highlands of Sirinić District for the following reasons:

- ideal conditions for blackberry growing;
- simple and easily managed technology of production and care;
- economical and highly cost-effective production;
- relatively small investments;
- labor-intensive production enabling employment of the workers with lower level qualifications.

Material and Methods

Plots for blackberry plantations are located at the altitude of 500 - 600 m, belonging to highland area of Municipality of Strpce. As this mountainous area has abundant rainfall, climatic conditions are very favorable, and the requirements for plenty of moisture in soil and in the air are therefore met. Klimatski uslovi su veoma povoljni jer kao planinsko područje ima nešto više padavina čime su obezbeđeni zahtevi kupine za dosta vlage u zemljištu i vazduhu. The most spread type of blackberries in Serbia and in Sirinić District is called *Čačanska bestrna*. Accompanied by specific growing method application, suitable domestic climatic and soil conditions create optimal growing environment for the sort. *Čačanska bestrna* exhibits great yield, good fruit quality and resistance to pests and diseases, which all together makes it the leading sort. If the plantation is formed with *Čačanska bestrna*, it is then recommended to create spacing of 3 x 1.5 m; for 1 ha, 2200 seedlings are needed (Milic et al., 2008). Other similar distances may also be taken into consideration, but it is always necessary to seize upon blackberry exuberance and the requirements for light, water and nutrition elements. For achieving the good quality of blackberry production it is necessary to provide a good planting material produced in registered stock nurseries, properly packed and declared, and controlled by competent professionals and institutions. Seedlings should all have a well-developed root system with a mass of small vessels, without symptoms of a disease or damage. The best period for planting is autumn, characterized by supreme reception and provision of more exuberant growth during the next growing season (Petrović et al., 2003). Lines with seedlings are best to be oriented north-south, because of the longest sunlit during the day. Producers most often chose row growing system; the best and the most productive is three-wired system with three rows of wire in one plane and with outcrops bending and wiring (Veljkovic et al., 2006). A proper irrigation is an essential factor in a modern, intensive production of blackberries; from this reason, we predicted the drip irrigation system in our investment calculation of blackberry plantation. During the last few years, blackberry production on family agricultural farms in Sirinić District has been monitored; planting investment calculation and calculation of blackberry production were made on the basis of the collected data.

By using an economic analysis method, an investment calculation was developed, as well as a planned calculation. The data were obtained during two years of monitoring a group of growers, as a part of a project focused on developing a strategy for local agricultural development. The prices of the materials used in blackberries production were obtained from the

local dealers who regularly supply blackberry growers. The prices for the blackberry plants were obtained from the local growers while the prices of the output were obtained from the local market. Having in mind that blackberry production in that area is at an early stage of development, the objectives of this study was to estimate the profitability based on present marketing, agroclimatic, and technological conditions with the slightest blackberry yield achieved in the group of growers.

Results and Discussion

Motivation for blackberry planting in Sirinić District are economic interests, provision of additional activity and additional revenue of mixed agricultural holdings and also the underemployment of household members.

Calculation for establishing the blackberry plantation on family farms with the area of 0.50 *ha*, by using sort *Čačanska bestrna* (planting space 3 x 1.50 m), is shown in Table 1.

Tab. 1. Investment calculation for blackberry plantation
Investiciona kalkulacija podizanja zasada kupine

A. Costs of material - <i>Troškovi materijala</i>					
No <i>Red. br.</i>	Type of material <i>Vrsta materijala</i>	Unit of measure <i>Jed. mere</i>	Quantity <i>Količina</i>	Price per unit <i>Cena po jed.mere</i>	Price € <i>Iznos €</i>
1	Seedling/ <i>Sadnica</i>	piece/ <i>kom.</i>	1110	0.40	800
2	Manure/ <i>Stajnjak</i>	t	25	20	500
3	Mineral fertilizer <i>Mineralno đubrivo</i>				
	a) NPK	kg	350	0.35	123
	8:12:26+3%Mgo b) KAN (29%N)	kg	150	0.30	45
4	Poles/ <i>Stubovi za naslon</i>	piece/ <i>kom.</i>	300	1.50	450
5	Supporting poles <i>Potporni stubovi</i>	piece/ <i>kom.</i>	230	1.00	230
6	Wire and nails <i>Žica i ekseri</i>	kg	200	1.00	200
7	Drip irrigation system (approximate price) <i>Sistem zalivanja kap po kap (okvirna cena)</i>	piece/ <i>kom.</i>	1	800	800
8	Pesticides/ <i>Pesticidi</i>	kg	2	90	180
9	TOTAL/ <i>UKUPNO</i>				2972

B. Costs of service - <i>Troškovi usluga</i>					
No <i>Red. br.</i>	Type of service <i>Vrsta usluge</i>	Unit of measure <i>Jedinica mere</i>	Quantity <i>Količina</i>	Price per unit <i>Cena po jed.mere</i>	Price € <i>Iznos €</i>
1	Pedologic and agrochemical soil analysis <i>Pedološka i agrohem. analiza zemljišta</i>	sample <i>uzorak</i>	2	35	70
2	Land flattening and clearing <i>Ravnanje i čišćenje terena</i>	hour/tractor <i>čas/traktor</i>	3	15	45
3	Manure transport <i>Prevoz stajnjaka</i>	hour/tractor <i>čas/traktor</i>	5	15	75
4	Plowing <i>Oranje</i>	hour/tractor <i>čas/traktor</i>	3	25	75
5	Cultivation <i>Frežiranje</i>	hour/tractor <i>čas/traktor</i>	3	25	75
6	Furrowing <i>Izvlačenje redova jamica</i>	hour/cultivator <i>čas/motk.</i>	5	6	30
7	Seedlings and fertilizers transportation <i>Prevoz sadnica i min. đubriva</i>	hour/tractor <i>čas/traktor</i>	1	15	15
8	Poles transportation <i>Prevoz stubova</i>	hour/tractor <i>čas/traktor</i>	3	15	45
9	Spraying x 3 <i>Prskanje x 3</i>	hour/tractor <i>čas/traktor</i>	5	20	100
10	Processing between rows x 3 <i>Međuredna obrada x 3</i>	hour/cultivator <i>čas/motk.</i>	6	6	36
	TOTAL/UKUPNO				496

C. Labour costs - <i>Troškovi radne snage</i>					
No <i>Red. br.</i>	Type of service <i>Vrste usluga</i>	Unit of measure <i>Jedinica mere</i>	Quantity <i>Količina</i>	Price per unit <i>Cena po jed.mere</i>	Price € <i>Iznos €</i>
1	Ground preparations <i>Priprema terena</i>	working day <i>radni dan</i>	2	10	20
2	Manure loading and unloading <i>Utovar i istovar stajnjaka</i>	“	3	15	45
3	Manure spreading <i>Rasturanje stajnjaka</i>	“	3	15	45
4	Raw marking <i>Obelež. pravca redova i popravka brazde</i>	“	3	10	30
5	Preparation of seedlings for planting <i>Priprema sadnica za sadnju</i>	“	2	10	20
6	Shortening and planting seedlings <i>Sadnja i prekraćivanje sadnica</i>	“	4	10	40
7	Watering <i>Zalivanje</i>	“	3	10	30
8	Mineral fertilizer spreading <i>Rasturanje mineralnih đubriva</i>	“	2	10	20
9	Weeding and ground breaking <i>Plevljenje i razbijanje pokorice</i>	“	15	10	150
10	Pruning and removal of cut shoots <i>Sečenje i iznošenje odsečenih izdanaka</i>	“	3	10	30
11	Back setting <i>Postavljanje naslona</i>	“	15 2	10 15	150 30
12	Shoots decapitation <i>Pinsiranje izdanaka</i>				
	TOTAL <i>UKUPNO</i>				610

$$\text{TOTAL (A+B+C)} = (2.972 + 496 + 610) = 4.078 \text{ €}$$

All the costs for one year of blackberry growing are presented in planned calculation (Table 2.), where the average yield and purchase price is predicted, which served for the calculation of the expected profit.

Tab. 2. Planned calculation of blackberry growing (0.50 ha, planned yield 7,000 kg).

Planska kalkulacija proizvodnje kupine (površina 0,50 ha, planirani prinos 7.000 kg)

I Costs of material - <i>Troškovi materijala</i>					
No <i>Red. br.</i>	Type of material <i>Vrsta materijala</i>	Unit of measure <i>Jedinica mere</i>	Quantity <i>Količina</i>	Price per unit <i>Cena po jed.mere</i>	Price € <i>Iznos €</i>
1	Manure/ <i>Stajnjak</i>	t	7	20	140
2	Mineral fertilizer <i>Mineralno đubrivo</i>	kg	300	0.35	105
	a) NPK 8:12:26+3%Mgo b) KAN (29%N)	kg	150	0.30	45
3	Pesticides/ <i>Pesticidi</i>	kg	5	80	400
4	Binding/ <i>Vezivo</i>	kg	6	5	30
5	TOTAL/ <i>UKUPNO</i>				720
II Costs of service - <i>Troškovi usluga</i>					
No	Type of service <i>Vrsta usluge</i>	Unit of measure <i>Jedinica mere</i>	Quantity <i>Količina</i>	Price per unit <i>Cena po jed. mere</i>	Price € <i>Iznos €</i>
1	Manure transportation <i>Dovoz stajnjaka</i>	hour/tractor <i>čas/traktor</i>	2	15	30
2	Mineral fertilizer transportation <i>Dovoz min.đubriva</i>	hour/tractor <i>čas/traktor</i>	1	15	15
3	Cultivation (3x) <i>Kultiviranje (3x)</i>	hour/cultivator <i>čas/kult.</i>	15	6	90
4	Spraying (5-6x) <i>Prskanje (5-6x)</i>	hour/tractor <i>čas/traktor</i>	9	20	180
5	Transportation of blackberries <i>Transport plodova</i>	hour/tractor <i>čas/traktor</i>	11	15	165
	TOTAL/ <i>UKUPNO</i>				480

III Labor costs - <i>Troškovi radne snage</i>					
No <i>Red br.</i>	Type of service <i>Vrsta usluge</i>	Unit of measure <i>Jedinica mere</i>	Quantity <i>Količina</i>	Price per unit <i>Cena po jed. mere</i>	Price € <i>Iznos €</i>
1	Manure spreading <i>Rasturanje stajnjaka</i>	working day <i>radni dan</i>	2	15	30
2	Mineral fertilizer spreading <i>Rasturanje min. đubriva</i>	working day <i>radni dan</i>	2	10	20
3	Tying and tensioning of the wires <i>Vezivanje izdanka i zatezanje zice</i>	working day <i>radni dan</i>	5	10	50
4	Removal of young shoots (3x) <i>Uklanjanje mladih izdanaka (3x)</i>	working day <i>radni dan</i>	6	10	60
5	Hand-hoeing in row direction (2x) <i>Ručno okopavanje u pravcu reda (2x)</i>	working day <i>radni dan</i>	6	10	60
6	Pruning and removal of old shoots <i>Rezidba i iznošenje starih izdanaka</i>	working day <i>radni dan</i>	6	10	60
7	Green pruning of exuberant outgrowth and side branches <i>Rezidba i iznošenje starih izdanaka</i>	working day <i>radni dan</i>	3	10	30
8	Fruit harvest <i>Berba plodova</i>	working day <i>radni dan</i>	60	10	600
9	TOTAL/UKUPNO				910
IV Amortization/ <i>Amortizacija</i>					300
V Other costs/ <i>Ostali troškovi</i>					200
A Total costs (I, II, III, IV, V)/ <i>Ukupni troškovi (I, II, III, IV, V)</i>					2.610
B Production value (7,000 kg x 0.80 €)/ <i>Vrednost proizvodnje (7.000 kg x 0.80 €)</i>					5.600
V Profit (B-A)/ <i>Dobit (B-A)</i>					2.990

Tab. 3. Financial production indicators: profit (p) = production value (pv) - total costs (tc) (€)

Finansijski pokazatelji proizvodnje: dobit (d) = vr.proizvodnje(vp) - ukupni troškovi(ut) (eur-ima)

Fruit type/ <i>Voćna vrsta</i>	Blackberry/ <i>Kupina</i>
Production value/ <i>Vrednost proizvodnje</i>	5.600
Total costs/ <i>Ukupni troškovi</i>	2.610
Profit/ <i>Dobit</i>	2.990

$$\text{Cost – effectiveness (E)} = \frac{\text{production value (V)}}{\text{total costs}} = \frac{5600}{2610} = 2.14$$

$$\text{Profitability rate} = \frac{\text{profit (p)}}{\text{production value (V)}} \times 100 = \frac{2990}{5600} = 53.39\%$$

There are also labor costs in the calculation which are a half of total production costs (910 €); these remain in the households as compensation for the work, i.e. income. Therefore, both the household profit and economic interest become higher.

Conclusion

According to the results of economic analysis of blackberry growing, it can be concluded that production generates income. Average calculation costs are predicted and production value is planned. Cost-effectiveness value in blackberry growing is 2.14. Depending of investments in blackberry growing, profitability rate is 53.39%. These calculations show the advantages of blackberry growing in Sirinička District, comparing to other fruit. Blackberry gives the fruits early, in the second year, while the full yield may be expected in the third year. With an adequate use of agro-technical measures, blackberry growing can be cost-effective in a period of 12 - 15 years; the growing period lasts for 2 years, the full yield period for 8 years, the decreasing yield period for 5 years. Realized production and purchase price in the market directly affect profitability level.

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Ekonomska opravdanost proizvodnje kupine u ruralnim područjima Siriničke Župe

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Sažetak

U Siriničkoj Župi kupine se uglavnom uzgajaju na manjim posedi-
dima u brdsko – planinskom području gde se postižu najbolji rezultati, ali
se u poslednje vreme tražnja za ovom vrstom jagodičastog voća stalno
povećava i interesovanje za njen uzgoj raste. Stoga je glavni cilj ovog rada
da prikaže rezultate ekonomske analize proizvodnje kupina sa podacima
dobijenim tokom dve godine praćenja grupe farmera u tom regionu. U
skladu sa tim je izračunata i prezentovana profitabilnost bazirana na
postojećim tržišnim, agroklimatskim i tehnološkim uslovima kao i na
najmanjem postignutom prinosu kupina u grupi uzgajivača. Prema rezulta-
tima ekonomske analize gajenja kupine, može se zaključiti da proizvodnja
donosi prihod čak i sa jednom trećinom potencijala prinosa. Ekonomičnost
proizvodnje kupina iznosi 2,14. Zavisno od investicija u proizvodnju ku-
pina, profitabilnost iznosi 53,39%. Ove kalkulacije pokazuju prednost
gajenja kupina u Siriničkoj Župi u odnosu na drugo voće.

Ključne reči: investicije, troškovi, kalkulacije, ekonomski značaj

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