

COST EFFECTIVENESS OF RASPBERRIES GROWING IN RURAL AREAS OF NORTH KOSOVO

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Abstract

Leposavic municipality is situated in the farthest north of Kosovo and Metohija, with 72 villages, about 5036 households and 14500 people. Agriculture has always been the main activity in this area. Livestock production is the main agricultural sector, but there are also good conditions for fruit growing especially for berries (raspberries, blackberries, blueberries). In Leposavic municipality raspberries are grown mainly in small rural estates from 10 to 30 acres in hilly and mountainous areas, with the best yield results. In those small estates there is no control over production which does not cover the minimum requirements of the customers. It is necessary to foster specialization of those households and to form associations in order to have full cycle raspberries production with mini-coolers that offer frozen raspberries as a final product. It would be important factor of sustainable rural development in the area of Leposavic municipality.

In order to achieve this goal, intensive raspberry growing is necessary. This paper presents an economic analysis guide to investments required to increase an area under raspberries plantations. An average calculation is given for raspberries growing in Leposavic municipality, as well as the profit and level of economic profitability. It is reasonable to expect that from the planned production, invested assets would be returned after three years which could form the basis for further development of the households, as well as the food processing industry.

Key words: raspberry, production, costs, economic importance

Introduction

North Kosovo is the unofficial name for the region on the north of the Autonomous Province of Kosovo and Metohia mainly inhabited by Serbians. After Albanians declared independence North Kosovo remained under Serbian control. It consists of four municipalities: North Kosovska Mitrovica, Zvecan, Zubin Potok and Leposavic. Leposavic municipality is situated farthest north in Kosovo and Metohija, with 72 villages, about 5036 households and 14500 people. Agricultural production in North Kosovo is far behind considering real opportunities determined with agro-ecological conditions.

Obviously, institutional absence in terms of agricultural support creates an environment, for farmers, that does not provide real opportunities in agricultural production. There is no strategy for sustainable exploitation of natural resources in terms of their valorization and direction towards creation of an excellent source of employment for increasing unemployed population. The extension service that has the most important role in such process does not functioning or does not exist. So the goal of this paper is to draw attention on good conditions for fruit growing especially for berries growing (raspberries, blackberries, blueberries), before all in order to actuate a discussion about the need for a systematic approach to model formulation of agricultural development in the North of Kosovo. Years of experience from many regions in Serbia show that raspberries' growing (in good agro-ecological conditions)

is more profitable than other agricultural industries (Veljkovic et al., 2003). In Leposavic municipality raspberries are grown mainly in small rural estates from 10 to 30 acres in hilly and mountainous areas with the best results.

Investment in raspberries growing comes from the fact that there are good climate and other conditions for this kind of production in rural areas in North Kosovo. Previous experiences show that raspberry growing is profitable and that demand exceeds supply. This production is an ideal investment and good income of mixed households in hilly and mountainous areas of North Kosovo for the following reasons:

- ideal conditions for raspberries growing
- simple and easily managed technology of production and care
- economical and highly cost-effective production
- relatively small investments

Material and methods

Plots for growing raspberries are at an altitude of 400 – 500 m on hilly and mountainous areas of Leposavic municipality. Weather conditions are very favorable with more precipitation, which is very good for raspberries, because of moisture in soil and in air. The most common cultivar in North Kosovo is Vilamet.

Present climatic and soil conditions are good for this cultivar with specific way of growing. Main characteristics of this cultivar are high yield, good quality and resistance to diseases and pests. With Vilamet cultivar spacing should be 2.5 x 0.25 m per hectare with 16000 raspberry seedlings. With Miker cultivar spacing should be 3.0 x 0.33 m with 10600 raspberry seedlings per hectare (Petrovic et al., 2002; 2005).

In order to achieve good quality growing of raspberries, seedlings should be good quality too, from registered nurseries, seedlings with well-developed root system with lots of small fibers with no symptoms of damage and illness. Planting should be in fall, with best reception, which ensures better growth during the next vegetation. North-South row direction is the best. In that way seedlings are in sunlit during the day (Petrovic et al., 2003).

Irrigation is necessary for modern, intensive raspberry growing (Veljkovic et al., 2006.), so it is necessary to incorporate in our investment calculation drop by drop irrigation system. Raspberry growing in family farms in North Kosovo was monitored during the past few years and based on data collected during that period investment calculation and calculation of raspberry growing has been made.

Results and discussion

Raspberry production in the North of Kosovo is an important additional source of income for households, where the most of family members participate in the production process, even the youngest ones. So, investment decision about the land area with raspberry needs to be made according to the number of active household members, involved in the production process. Table 1 presents a calculation for raspberry growing on a family farm, 0.20 ha, using Vilamet cultivar with spacing 2.5 x 0.25 m.

Labor costs in the calculation constitute almost 50% of total production costs, which in turn give higher income for the household and increases importance of this kind of agricultural production particularly by increasing the employment rate. Given investment calculation contains predicted costs for growing of 0.20 ha of raspberries and total investment will be compared with annual income of raspberry growing in order to show economic viability.

Table 1. Investment calculation for raspberry growing

A. Costs of material

No	Type of material	Unit of measure	Quantity	Price per unit	Price/Eur
1	Seedling	piece	3200	0.25	800
2	Manure	ton	10	20	200
3	mineral fertilizer a) NPK 8:12:26+3%Mgo b) KAN (29%N)	kg	140	0.35	49
		kg	60	0.30	18
4	Poles	piece	180	1.50	270
5	supporting poles	piece	50	1.00	50
6	wire and nails	kg	80	1.00	80
7	Drip irrigation system (approximate price)	piece	1	300	300
8	Pesticides	kg	1	90	90
9	TOTAL				1857

B. Costs of service

No	Type of service	Unit of measure	Quantity	Price per unit	Price/Eur
1	Soil and agrochemical analysis	sample	2	35	70
2	Land flattening and clearing	hour/tractor	1	15	15
3	Manure transport	hour/tractor	2	15	30
4	Plowing	hour/tractor	1	25	25
5	Cultivation	hour/tractor	1	25	25
6	Furrowing	hour/cultivator	2	6	12
7	seedlings and fertilizers transportation	hour/tractor	1	15	15
8	Poles transportation	hour/tractor	1	15	15
9	spraying	hour/tractor	1	20	20
10	Processing between rows	hour/cultivator	4	6	24
	TOTAL				181

C. Labour costs

No	Type of service	Unit of measure	Quantity	Price per unit	Price/Eur
1	ground preparations	working day	1	10	10
2	manure loading and unloading	“	1	15	15
3	manure spreading	“	1	15	15
4	raw marking	“	1	10	10

5	preparation of seedlings for planting	“	1	10	10
6	shortening and planting seedlings	“	2	10	20
7	watering	“	2	10	20
8	mineral fertilizer spreading	“	1	10	10
9	weeding and ground breaking	“	6	10	60
10	pruning and removal of cut shoots	“	1	10	10
11	back setting	“	8	10	80
	TOTAL				260

TOTAL (A+B+V) = (1.857 + 181 + 260) = 2.298 €

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

Table 2. Planned calculation of raspberry growing (0.20 ha, planned yield 3,000 kg).

I Costs of material

No	Type of material	Unit of measure	Quantity	Price per unit	Price/Eur
1	manure	ton	3	20	60
2	mineral fertilizer				
	a) NPK	kg	120	0.35	42
	8:12:26+3%Mgo b)				
	KAN (29%N)	kg	60	0.30	18
3	pesticides	kg	1	80	80
4	binding	kg	2	5	10
5	TOTAL				210

II Costs of service

No	Type of service	Unit of measure	Quantity	Price per unit	Price/Eur
1	manure transportation	hour/tractor	1	15	15
2	mineral fertilizer transportation	hour/tractor	1	15	15
3	Cultivation (3x)	hour/cultivator	6	6	36
4	Spraying (5-6x)	hour/tractor	6	20	120
5	Transportation of raspberries	hour/tractor	8	15	120
	TOTAL				306

III Labour costs

No	Type of service	Unit of measure	Quantity	Price per unit	Price/Eur
1	manure spreading	working day	1	15	15
2	mineral fertilizer spreading	working day	1	10	10
3	tying and tensioning wires	working day	4	10	40
4	removal of young shoots (3x)	working day	4	10	40
5	hand-hoeing in row direction (2x)	working day	4	10	40
6	Harvest	working day	60	10	600
7	pruning and removal of old shoots	working day	2	10	20
	TOTAL				765

IV Amortization	185
V Other costs	60
A Total costs (I, II, III, IV, V)	1,526
B Production value (3,000 kg x 1.00 €)	3,000
V Profit (B-A)	1,474

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

Fruit cultivar	Raspberry
Production value	3,000
Total costs	1,526
Profit	1,474

$$\text{Production economy (E)} = \frac{\text{production value (V)}}{\text{total costs}} \times 100 = \frac{3000}{1526} \times 100 = 196.59\%$$

$$\text{Profitability rate} = \frac{\text{profit (p)}}{\text{investment (i)}} \times 100 = \frac{1474}{2298} \times 100 = 64.14\%$$

In the calculation there are also labour costs which are half of total production costs (765 €), and they remain in households as their profit. Household income is higher and economic interest is greater given that almost all family members participate and decrease the labor costs going outside.

Conclusion

Based on economic analysis results of raspberry growing, it can be concluded that production generates income. Average calculation costs are predicted and production value is planned. Cost-effectiveness in raspberry growing is 196.59%. Depending of investments in raspberry growing, return rate is 64.14%. These calculations show advantages of raspberry growing in North Kosovo comparing to other fruit. Full yield will be in the 3rd year. With proper use of agro-technical measures, raspberry growing can be cost-effective from 12 until 15 years:

growing period lasts for 2 years, full yield period 8 years, decreasing yield period 5 years. Realized production and purchase price in the market directly affect profitability level.

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