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## ORGANIC FOOD IN CROATIA: PRODUCTION PRINCIPLES AND OUTLOOK

Greta Krešić  
Marko Sučić

**Abstract:** The term “organic food” denotes products that have been produced in accordance with the principles and practices of organic agriculture. Organic agriculture and food processing practices are wide ranging and overall seek to foster the development of a food production system that is socially, ecologically and economically sustainable. Organic food is increasingly attracting consumers who are confident that this food has higher nutritional quality, and is safer and more wholesome than conventional products. Scientific evidence of the nutritional superiority of organic food compared to food from conventional methods is limited. However, organic food has an important position within the concept of sustainable development. Since one of Croatia’s goals should be to become a destination for environmentally and socially responsible travellers who in general tend to consume organic food, organic food should find its place within ecotourism and rural tourism. Due to its agro-ecological diversity and natural resources, Croatia possesses great potential for organic food production. Designing a tourism offering which includes organic food would not only contribute to the development of rural areas but would also help to raise the environmental awareness of tourists, thus fostering environmental sustainable development.

*Key words:* organic food, tourism, Croatia.

### INTRODUCTION

Within a concept of sustainable development, nowadays, the extensive usage of such kinds of agro-technical management practices which could contribute to environmental friendly, economically profitable and, at the same time, ethical and socially acceptable agricultural production is strongly welcome. The development of organic agriculture could be seen as made in response to conventional agriculture, which is characterized by the enormous use of natural resources whose renewability is quite slow and, in some cases, even impossible. It is here that organic agriculture and organic production find their place, as a part of modern agriculture practices which effectively use the potential of certain ecosystem and harmonize the biological processes of either its parts or of the system as a whole (Znaor, 1996). However, the term “organic” refers to the process, not to the final product, and the improvement of food quality features is mostly associated with the production system rather than any intrinsic quantifiable feature (Food and Agriculture Organization, 2000). “Organic” is the description used only in English-speaking countries; in other markets, “Bio”, “Okó”, “Eco” or “Eko” are the most usual description. In the Croatian language, the usual term for this kind of agricultural practice is *ekološki* meaning ecological, but for

the purpose of this manuscript, the term “organic” will be used to make the contents more accessible to native English speakers.

## **1. DEFINITION AND HISTORICAL BACKGROUND OF ORGANIC AGRICULTURE**

According to Croatian law, organic (ecological or biological) production is defined as a specific system of sustainable management applied in agriculture and forestry, involving the cultivation of plants and breeding the livestock, food production, the production of raw materials and natural fibres and the processing of primary products on the basis of ecologically, economically and socially acceptable production methods and systems. This kind of production makes the most advantageous use of soil fertility, available water resources, and the natural properties of plants and livestock with the aim of increasing the natural resistance of plants and livestock by utilising natural forces, together with the prescribed use of fertilizers and agents for plant and animal protection (*Zakon o izmjenama i dopunama zakona o ekološkoj proizvodnji poljoprivrenih i prehrambenih proizvoda*, 2007). According to Croatian legislature, an organic product (organic food) is any product produced in accordance with the previously described principles and which is properly labelled in accordance to regulations (*Zakon o ekološkoj proizvodnji poljoprivrednih i prehrambenih proizvoda*, 2001). The mentioned Act described in details principles of production of organic foodstuffs, trading with organic products, labelling and conduction of professional and inspection monitoring. It also covers all other issues of importance necessary for conducting organic agriculture. This Act strictly point out that the aim of organic agriculture is to protect health and well-being of humans and animals, to protect the environment and to protect the consumers.

The protected term “organic” is used within the European Union to describe a production system designed to produce optimum quantities of food of high nutritional quality by using management practices which aim to avoid the use of agrochemical inputs and which minimize damage to the environment and wildlife (*Institute of Food Science and Technology*, 2005).

According to the *Codex Alimentarius*, organic agriculture is based on minimizing the use of external inputs and avoiding the use of synthetic fertilizers and pesticides. Organic agriculture practices cannot ensure that products are completely free of residues, due to general environmental pollution. However, methods are used to minimize pollution of air, soil and water. Organic food handlers, processors and retailers are required to carry into effect standards to maintain the integrity of organic agricultural products. The primary goal of organic agriculture is to optimise the health and productivity of interdependent communities of soil life, plants, animals and people (*Codex Alimentarius*, 2001).

### **1.1. Historical overview of organic agriculture**

Organic agriculture appeared in the first half of the twentieth century on the basis of biological-dynamic agriculture, primarily aiming to protect soil from continuous degradation. The organic agriculture movement was established in the UK in 1943. Nowadays, this movement and its associated organization “The Soil Association” are the base of organic agriculture in the UK and in the other countries under British influence. The International Organization of Organic Agriculture Movements (IFOAM), established in 1972 represents an umbrella organization for all issues regarding organic agriculture, and it coordinates activities in more than 600 organizations in over 90 countries worldwide. The mission of this organization is to pool the efforts of people from around the world to improve organic agriculture as a ecologically, socially and economically acceptable agriculture practice. IFOAM has its representatives in bodies such as the UN and the EU and, it actively contributes to aligning general agriculture trends with the principles and rules of organic agriculture. The UN Food and Agriculture Organization (FAO) strongly support organic agriculture as a way of overcoming the crisis in the agricultural sector.

In Croatia, a society for organic-biological agriculture and production practices named BIOS was established in 1991. This society is a non-government organization aimed at spreading and supporting the organic movement. BIOS has been an official member of IFOAM since 1992. The recommendation of IFOAM is to bring together the national members into one society at the national level, with the aim of making communication easier and more efficient.

### **1.2. Principles of organic agriculture**

One of the characteristics of conventional agriculture is evidently the excessive and irrational usage of nonrenewable natural resources, which has, consequently, resulted in disrupting the natural balance of the entire ecosystem. In the light of sustainable development, sustainable agriculture based on the principles of organic movements should slow down this process and contribute to the protection of natural resources.

The guiding worldwide principles for organic agriculture are defined by the International Federation of Organic Agricultural Movements (IFOAM). This principles which are also adopted in Croatia are detailed below (Institute of Food Science and Technology, 2005):

- To produce food of high nutritional quality in sufficient quantity.
- To interact in a constructive and life-enhancing way with natural systems and cycles.
- To encourage and enhance biological cycles within the farming system, involving microorganisms, soil, flora and fauna, plants and animals.
- To maintain and increase long-term fertility of soils.
- To promote the healthy use and proper care of water, water resources and all life therein.

- To help in the conservation of soil and water.
- To use, as far as possible, renewable resources in locally organized agricultural system.
- To work, as far as possible, within a closed system with regard to organic matter and nutrient elements.
- To work, as far as possible, with materials and substances that can be reused or recycled, either on the farm or elsewhere.
- To give all livestock conditions of life which allow them to perform basic aspects of their innate behaviour.
- To minimize all form of pollution that may result from agricultural practice.
- To maintain the genetic diversity of the agricultural system and its surroundings, including the protection of plant and wildlife habitats.
- To allow everyone involved in organic production and processing a quality of life conforming to the UN Human Rights Charter, to cover their basic needs and obtain an adequate return and satisfaction from their work, including a safe working environment.
- To consider the wider social and ecological impact of the farming system.
- To produce non-food products out of renewable resources, which are fully biodegradable.
- To encourage organic farming associations to function along democratic lines and the principle of division of power.
- To progress towards an entire organic production chain, which is both socially just and ecologically responsible.

According to the Croatian legislature which in details describe terms, principles of production, methods of processing, storage and control of foodstuffs in all stages, it is obligated that all activities should be carried out in accordance with previously mentioned international standards and principles (Zakon o ekološkoj proizvodnji poljoprivrednih i prehrambenih proizvoda, 2001; Zakon o izmjenama i dopunama zakona o ekološkoj proizvodnji poljoprivrednih i prehrambenih proizvoda, 2007).

## **2. ORGANIC PRODUCTION IN CROATIA AND WORLDWIDE**

Globally, the intensive expansion of organic agriculture, particularly due to a heightening of environmental awareness, dates back to the 1980s. In the Europe, the leading countries in following this trend are the UK, Germany, Austria and Italy, while in the rest of the world, this movement is the most widespread in Australia and the USA. The FAO, which has put much effort into supporting organic agriculture in all parts of world, emphasizes that organic agriculture could contribute also to the increase of global food production, which is of great importance not only because it would help alleviate world hunger, but also because it would produce positive ecological impacts.

## 2.1. Organic management worldwide

Organic agriculture has developed rapidly worldwide during the last few years and is practiced in approximately 120 countries across the world. Its share of agricultural and farms continues to grow. According to the data from 2006, more than 31 million hectares are managed organically by at least 623, 174 farms worldwide. The countries with the greatest organic areas are Australia (12.1 million ha), China (3.5 million ha) and Argentina (2.8 million ha). In total, Oceania holds 39 % of the world's organic land, followed by Europe (21%) and Latin America (20%). The proportion of organically compared to conventionally managed land, however, is highest in Europe (IFOAM, FiBL, Söl, BioFach, 2006). Among the ten countries with the highest percentage of land area under organic management, Liechtenstein is ranked first, followed by Austria, Switzerland, Finland, Sweden, Italy, the Czech Republic, Portugal and Estonia.

## 2.2. Organic agriculture and organic farming in Croatia

Due to its agro-ecological diversity and natural resources, Croatia possesses great potential for organic agriculture. Unfortunately, it has failed to tap into this potential to any considerable extent. The development of organic agricultural production provides important opportunities for the export of Croatian products (particularly foods) on the European market. Selling Croatian agricultural products through tourism is also another important opportunity that should be capitalized on. The movement of organic agriculture in Croatia has been continuously increasing over recent years, as illustrated by the areas under organic agriculture presented in Table 1.

**Table 1:** Areas (ha) under organic agriculture in Croatia 2002-2008

Areas (ha)/ Year	2002	2003	2004	2005	2006	2007	2008
Plowland	49.4973	2 494	2 386	2 214	2957.92	2915.69	2800.94
Orchards		27	34	84	200.93	574.72	791.39
Vineyards		43	30	30	31.93	74.84	212
Olive-groves		2	3	26	36.98	82.83	100.45
Meadows and pasture grounds		940	146	740	2620.10	3495.81	5672.65
Fallow land	2.2883		3	27	101.80	40.15	24.36
Forests			52	60	58.58	86.94	81.9
Vegetables						92.17	95
Medical herbs						214.14	230.9
TOTAL	51.78	3 506	2 654	3184	6008.24	7577.29	10,010

Source: Ministry of Agriculture, Fisheries and Rural Development, Republic of Croatia

From the results presented in Table 1 it can be seen that the total areas under organic agriculture have increased more than 200 times over the last 6 years (from approximately 52 ha in 2002 to more than 10,000 ha in 2008). However, organic agriculture represents just 0.92 % of total Croatian agriculture. In percentages, plowland accounts for the largest share of areas under organic agriculture, although there has been an evident increase since 2006 in the area of meadows and pasture grounds used for organic agriculture. This is due to the trend of increase in organic livestock. In 2008, of all areas under organic agriculture in Croatia, meadows and pasture grounds accounted for the highest percentage (56.7%), with plowland ranking second (28%), followed by orchards (8%), vineyards and olive groves (2%). Since 2007, there has been an obvious increase of areas on which organic medical herbs are cultivated (Table 1). Table 2 presents organic livestock production in Croatia in the 2005- 2008 period.

**Table 2:** Organic livestock production (in numbers) in Croatia 2005- 2008

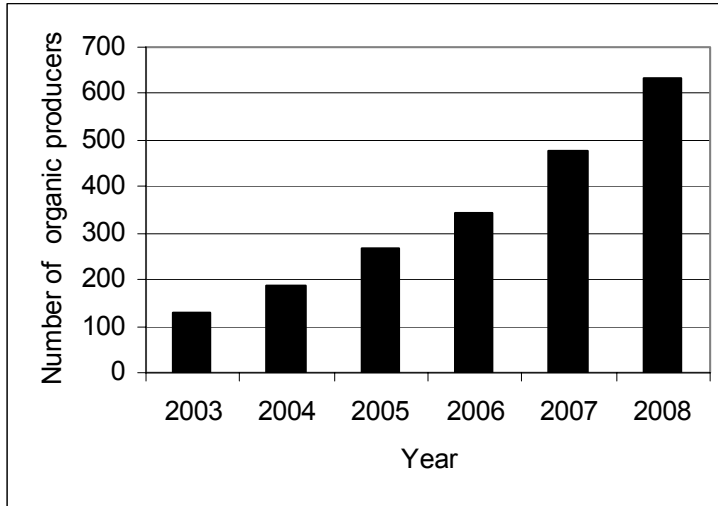
<b>Year/ Livestock (numbers)</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>
Cattle	315	345	2749	5813
Hoofed animals	45	19	134	417
Sheep	4 520	3 952	6326	10501
Goats	2 226	1 938	3517	2780
Pigs	181	184	473	336
Poultry	5 717	1 180	2885	3598
Bees/Beehives	671	822	2710	2780
Rabbits	-	11	81	-

Source: Ministry of Agriculture, Fisheries and Rural Development, Republic of Croatia

In total organic livestock production in Croatia over the past three years, sheep farming holds first place, followed by cattle farming, poultry farming and apiculture. During 2006, there was an obvious decline in organic poultry farming due to the strict regulations dealing with the revention of avian flu (Table 2).

The number of individual producers registered in the Register of Organic Producers kept by the Croatian Ministry of Agriculture, Fisheries and Rural Development has been continuously growing over the last couple of years. Consequently, 632 organic producers were certified in Croatia as of 31 December 2008 (latest official data) (Figure 1). This upward trend in the number of organic producers has been fostered by state monetary incentives, which are 30% higher for organic agriculture compared to conventional agriculture.

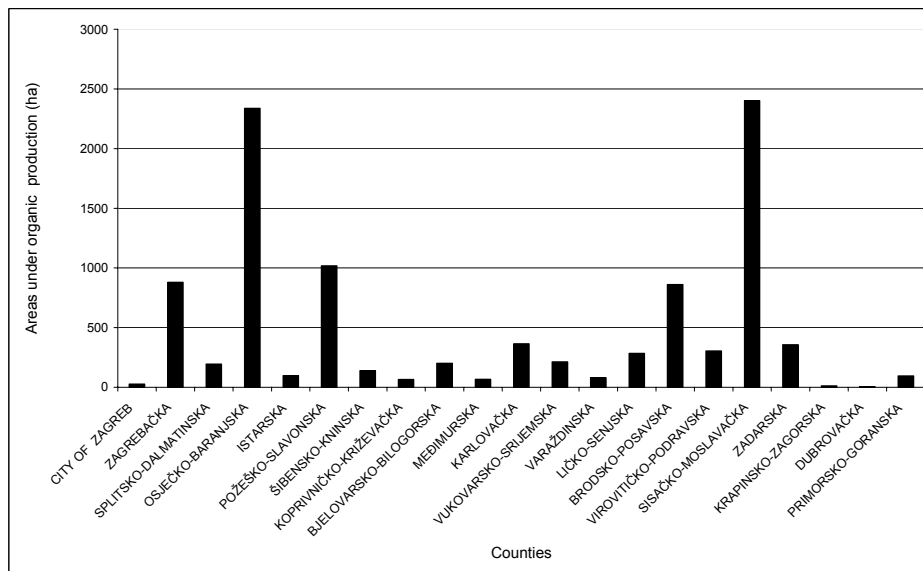
**Figure 1:** Number of organic producers in Croatia 2003-2008



Source: Ministry of Agriculture, Fisheries and Rural Development, Republic of Croatia

The distribution of areas under organic production (ha) by Croatian counties is summarized in Figure 2.

**Figure 2:** Areas under organic production (ha) in Croatian Counties in 2008.



Among the Croatian counties, the leaders in organic agriculture with the largest amounts of area under organic agriculture, are the Sisačko-Moslavačka County (2401 ha) and Osječko-Baranjska County (2337 ha). Significant areas are also under organic agriculture in the Brodsko-Posavska County and the Zagrebačka County. Organic agriculture is very poorly developed the Dubrovačko-Neretvanska County, Croatia's southern most county, in which there are only 5 registered producers with 529 ha under organic agriculture.

### 2.3. Labelling of organic food

“Organic” is a labelling term that denotes the products that have been produced in accordance with organic production standards and certified by a duly constituted certification body or authority. In Croatia, all products that have been certified in compliance to the Regulation (Pravilnik o deklariranju i označavanju ekoloških proizvoda, 2007) should be labelled accordingly (Figure 3).

**Figure 3:** Croatian label for organic products



Labelling in organic production provides a very important benefit for consumers, since it helps to inspire consumer trusts regarding traceability and control in all stages of organic food production. It is requirement of the EU, and also of Croatia, that no claims may be made on the label or advertising material that suggest to the customer that the indication of organic production methods constitutes a guarantee of superior organoleptic, nutritional or salubrious quality (Pravilnik o deklariranju i označavanju ekoloških proizvoda, 2007).

### 2.4. Quality of organic food

Organic products are increasingly attracting consumers who are confident that this food has higher nutritional quality, and is safer and more wholesome than conventional products. Some researchers have attempted to develop a profile of the consumer of organic food. The consumers of eco-food could be classified into four broad (and presumably overlapping) groups: (1) those who are concerned with the environment, (2) food phobic who are concerned about chemical residues in food, (3) humanists concerned with factory farming and (4) hedonists who believe that a premium product must be better and, more importantly, taste better (Davies *et al.*, 1995).



A large number of studies have been reported attempting to investigate if there is a difference in the nutritional value of organic and conventionally grown food. However, there is a considerable variation in the type of studies and study designs what consequently make the comparison of study results very difficult. As in details reviewed, studies comparing foods derived from ecological and conventional growing system generally were assessed for three key areas: nutritional value, sensory quality and food safety (Bourn & Prescott, 2002). With the possible exception of nitrate content, there is no strong evidence that organic and conventional foods differ in concentration of various nutrients. Considerations of the impact of organic growing system on nutrient bioavailability and non-nutrient components have received little attention. While there are reports indicating that organic and conventional fruit and vegetables may differ on a variety of sensory qualities, the findings are inconsistent. There are also no evidence that organic food may be more susceptible to microbiological contamination than conventional food. While it is likely that organically grown foods are lower in pesticide residues, there has been very little documentation of residue levels.

Although organic food cannot be defined as pesticide-free or herbicide-free, the direct use of other than “traditional” agricultural chemicals is prohibited. Organic crops are therefore likely to contain lower pesticide and herbicide residues than their non-organic counterparts, and to be free from possibility of exceeding the legal limits for pesticide residues that very occasionally comes to light in ongoing surveillance. GMO and their derivatives are strictly prohibited at every stage of ecological production.

However, according to the IFOAM definition since organically-grown fruits and vegetables obtain their nutrients from healthy soils, rather than synthetic fertilizers, they are lower in water content, thus reserving higher nutritional density; they are richer in iron, magnesium and vitamin C, and antioxidants; and they provide a more balanced combination of essential amino-acids. Organic livestock farmers work to optimise the animals' health and well-being rather than maximizing their potential output through rearing practices, such as balanced diet and sufficient room for physical and mental needs. Organically raised animals have better overall health, especially in the areas of reproduction and recovery from illness. Organically raised animals have a reduced risk of carrying diseases. In fact, no record of BSE has been found in organically-raised animals. Organically raised animals have an ideal fat profile, that is, they have a lower ration of saturated and unsaturated fat ([www.ifoam.org](http://www.ifoam.org)).

In conventional agriculture, livestock are regularly provided antibiotic drugs to prevent disease and to promote rapid growth. There is concern that humans are developing resistance to antibiotics due to the indirect consumption of antibiotic drug residues in animal-based products.

The results of an often cited study of Bergamo and co-workers (2003) show that organic milk generally contains higher levels of beneficial compounds in the milk fats, particularly fatty acids, as well as fat-soluble vitamin concentrations (namely  $\alpha$ -tocopherol and  $\beta$ -carotene). The nutritional benefits of organic milk can be explained by the difference in diet of organically raised cows. Organically raised cows eat much more natural diet mostly consisted of fresh grass and clover (forage). In comparison,

conventional dairy farmers are allowed to use more grain-based (concentrate) feed containing cereals, maize and protein supplements. These diets increase milk yields but also effect the nutritional composition of the milk, as well as the health of the cows.

### **3. OUTLOOK OF ORGANIC AGRICULTURE AND ORGANIC FARMING IN CROATIA**

On the one hand, the adoption of the “Act on Organic Production of Agricultural Products and Foodstuffs” (Zakon o ekološkoj proizvodnji poljoprivrednih i prehrambenih proizvoda, 2001) in Croatia has encouraged new markets to emerge, helped to reinforce consumer trusts, and provided opportunities to set a higher prices of food due to the added-value of this products. On the other hand, the benefits from enforcing regulations in this field can be seen in the decrease of natural resources usage, the protection of environment, the preservation of soil quality and fertility, as well as in greater traceability from raw materials to final products. All this helps Croatian producers in the process of entering into and competing on domestic, as well as international markets.

#### **3.1. Advantages of organic agriculture and organic farming**

The propulsive adoption of organic agriculture and organic farming in Croatia helps to ensure the:

- sustainable management of natural resources, preservation of soil fertility and the quality of water and non-renewable natural resources,
- reorientation of farms towards organic and more profitable farming,
- specialisation of family farms,
- establishment of markets specialising in organic products of the highest quality,
- distribution of these products on the market through tourism and export,
- increase of employment in the sectors of agriculture, processing and selling,
- improvement in the quality of life in rural areas, resulting in a decrease of migration to cities.

#### **3.2. Impact of organic agriculture and organic farming on tourism – organic food as a tourism product**

Food, in general, is an important tourist attraction in an assortment of forms, and it enhances, or is central to, the visitor experience. It has assumed a prominent role in tourist decision-making and satisfaction, tourism products and place promotion strategies. As such, it can be a useful instrument of destination and general development. It is vital for physical sustenance and, while all tourists have to eat when

travelling, for some food can be a major draw and primary motivator, satisfying a multiplicity of physiological and other needs and wants (Tikkanen, 2007).

One of Croatia's goals is to become a destination for environmentally and socially responsible travellers who tend to consume organic food. Since organic agriculture is regarded as an approach to agriculture and food production which is environmentally sustainable and which can generate and promote positive impact to rural society, in the tourism sector, organic food finds its place within ecotourism and rural tourism. Recognising this relationship, the UN Food and Agriculture Organization has set a link between ecotourism and organic agriculture and/or farming. The FAO views ecotourism as an opportunity for farmers to generate additional income and, at the same time, sees it as one of the most effective ways of preserving biodiversity. The FAO distinguishes ecotourism from farm tourism (holiday on farmland), pointing to the symbiotic relationship between tourism and agriculture as a key element of an environmentally and socially responsible tourism. The FAO also mentions the term "agro-ecotourism" as a combination of nature-based ecotourism and farm-based agro-tourism. It sees the most important resource for tourism development in the rural landscape, which usually is a combination of wild and agro-ecosystems.

A supply of high quality products (including those from organic agriculture and/or farming) significantly helps towards raising the quality of the entire tourism product and increasing its competitiveness on the global market. Croatia has the best outlook in the cultivation of fruits and vegetables (which mature earlier due to the climate conditions), organic-seeds (also because of specific climate conditions in Croatia), organic bee-keeping and the cultivation of organic medical herbs.

One of the benefits of a more-extensive implementation of organic agriculture and farming is the generation of new income and employment opportunities for many families who would otherwise migrate to cities. Another important benefit is the consolidation of the relationship between urban and rural people, with the former increasingly visiting rural regions to learn more about producers, and where and how they live, and also to ensure that the products they are buying and eating are effectively organic.

## CONCLUSION

Demand for organic products is increasingly daily not only in Croatia, but also in the rest of the world, so the promotion of these products should be one of the goals in the policy of rural development, as well as tourism development in Croatia. Considering the need of aligning economic development with the principles of sustainable development (which include environmental, socio-cultural, economic and cultural sustainability), the broader adoption of organic agriculture and/or organic farming which ensures compatibility between development and protection of the environment should be welcomed. Croatia has potential for more-extensive development of organic agriculture, the products of which should be channelled onto the market through ecotourism and rural tourism. There is also room for greater and, perhaps, more-focused advertising directed at Croatian organic food. Destination

marketers must also endeavour to appreciate the organic food resources of the places they are promoting.

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**Greta Krešić**, PhD, Assistant Professor  
University of Rijeka, Faculty of Tourism and Hospitality Management, Opatija  
Primorska 42, P.O. Box 97, 51410 Opatija, Croatia  
e-mail: [greta.kresic@fthm.hr](mailto:greta.kresic@fthm.hr)

**Marko Sučić**, BSc, Student  
University of Rijeka, Faculty of Tourism and Hospitality Management, Opatija  
Primorska 42, P.O. Box 97, 51410 Opatija, Croatia