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# IMPROVING THE MARKETING POTENTIAL OF RURAL AREA THROUGH THE CULTIVATION OF THE INDUSTRIAL HEMP

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Nemanja Brkljača<sup>1</sup>, Svetlana Mihić<sup>2</sup>, Boško Umetić<sup>3</sup>, Dejan Supić<sup>4</sup>

\*Corresponding author E-mail: [nemanja.brkljaca@educons.edu.rs](mailto:nemanja.brkljaca@educons.edu.rs)

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## ABSTRACT

In presently, industrial hemp (*Cannabis sativa* L.) represents a controversial plant that is not researched enough. The aim of the study presented in this paper is to show that marketing of the rural areas can be done through the cultivation of industrial hemp. Hemp has a huge marketing potential which can be a tool of rural development in Serbia. Concrete results are given from the point of the view of three groups: people who reside in cities, owners of healthy food markets and producers. The author presented survey research which shows that the majority of people are not well educated about the difference between marijuana and industrial hemp. There is a common opinion that the production of industrial hemp itself is an advertisement of a rural area. The contribution and significance of herein presented results lies in the marketing of underdeveloped rural areas, redevelopment of cultivation of sidelined agricultural crops in order to strengthen the rural area.

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## Introduction

Imperative for the research hides in the negative demographic situation in rural areas in Serbia and high international market potential of industrial hemp (IH). As an agricultural crop that can be used in several important industries, this plant potentially could bring

- 1 Nemanja Brkljača, M.Sc., Teaching Assistant, Educons University, Faculty of Ecological Agriculture, Vojvode Putnika 87, 21208 Sremska Kamenica, Serbia, Phone: +381643222051, E-mail: [nemanja.brkljaca@educons.edu.rs](mailto:nemanja.brkljaca@educons.edu.rs), ORCID ID (<https://orcid.org/0000-0001-8893-1990>)
- 2 Svetlana Mihić, Ph.D., Full Professor, Educons University, Faculty of Business Economics, Vojvode Putnika 87, 21208 Sremska Kamenica, Serbia, Phone: +38163344438, E-mail: [svetlanamihic@gmail.com](mailto:svetlanamihic@gmail.com), ORCID ID (<https://orcid.org/0000-0002-4221-685X>)
- 3 Boško Umetić, M.Sc., Directorate for Agrarian Payments - Ministry of agriculture, forestry and water management, EDUCONS University, Faculty of Business Economics, Vojvode Putnika 87, 21208 Sremska Kamenica, Serbia, Phone: +381641284517, E-mail: [boskoumetic@mts.rs](mailto:boskoumetic@mts.rs), ORCID ID (<https://orcid.org/0000-0002-1527-4149>)
- 4 Dejan Supić, Ph.D, Assistant Professor, Educons University, Faculty of Ecological Agriculture, Vojvode Putnika 87, 21208 Sremska Kamenica, Serbia, Phone: +38163531713, E-mail: [dsupic@gmail.com](mailto:dsupic@gmail.com), ORCID ID (<https://orcid.org/0000-0003-2156-5345>)

back people to rural areas. Many villages in the rural areas are abandoned and the rest of the population live into their old age. Serbia has 1034 settlements that have less than 100 people living there, which is very worrisome. Over a nine year span, the population of East and South Serbia has reduced by 19%. The number of the inhabitants in the region of Vojvodina, one of the most developed regions in Serbia, has decreased by 115 thousand in the period of two population censuses. Negative natural growth is present in 82.5% of the settlements (Novakov, Janković, 2019). Research continues to show evidence of a downward trend.

The population of the rural areas should come back to thoroughly tested economic methods and natural values. Arable production and healthy life are both quite sought-after in the modern age.

At the very beginning of 21st century, *Cannabis sativa* has been rediscovered as a high-value crop that can be used for numerous products in almost all industries. Hemp has been used for more than 10000 years in all parts of the world. Within the last century it has been used in many industries such as textile, pharmacy, food industry, car as well as civil engineering (Henry Ford presented “hemp car” in 1941) (Panzer, Stoiser, 2014).

Scientists were very divided over the classification of IH. The nature of this plant is very fascinating and depends on both morphological characteristics and geographical origin. Its controversial background comes from phenology and quantitative traits due to the influence of the environment, more specifically climatic conditions. Firstly, taxonomic units' division and the number of species within the genus *Cannabis* were focused on morphological performance and geographical provenance. With the development of technology in chemistry, the approach to classification has changed to molecular levels and biotechnology. The main reason for disagreements over the classification is the crossing of wild hemp species and the variability of their characteristics in quantitative terms (Koren et al., 2020).

Around 25,000 products can be made from IH. Every part of the plant is useful. From the seed one can obtain cold pressed oil which can be used for cooking various food and salads. Seed oilcake is rich in proteins and also good as powder. Fiber can be used for textile, paper, car industry, carpeting, composites, furnishings, and more. IH can also be used for body care such as soaps, bath gels, cosmetics, and lotions, pharmacy, nutritional supplements and can even been used in the aviation sector as a fiberglass alternative. Hemp mixed with lime is a very good building material. A wide range of IH's usage can be concluded with the application as a cover crop and potential biodiesel feedstock (Johnson, 2018).

Taking the significance and benefits of the IH, there is a main question why this plant is still not used as a economic tool for the development of the rural areas? The aim of the study presented in this paper is to show that marketing of the rural areas can be done through the manufacture of industrial hemp. The significance and contribution of this paper is reflected in a concrete example of the marketing of underdeveloped rural areas, redevelopment of cultivation of sidelined agricultural crops in order to strengthen the

rural area economically and statistical support of the above through the processed information of the Ministry of Agriculture, which is published summary for the first time in the 21st century.

### Industrial hemp

According to the increased interest for industrial hemp in the previous 10 years in Europe, this trend also came to Serbia. Hectares of agricultural land under the IH enlarged, new companies are open and many investors are coming from abroad. In Serbia, IH is a forgotten plant that was grown on more than 50000 hectares, mainly on the north of the country in the region of Vojvodina. The Ministry of Agriculture of Serbia shows that the last 10 years IH came back to our fields started from only a few hectares and spread to 922 hectares throughout Serbia in 2019 (Table 1.). There is no doubt that growth would have been recorded also in 2020 if there had not been the Covid19 virus pandemic and lockdown. Due to the pandemic, many farmers did not submit permit documentation until the 1st of May 2020 (lockdown in Serbia was from 15th of March till 6th of May 2020). Instead of growth, the hectares reduced to 630 in agricultural season 2020.

**Table 1.** Areas under industrial hemp in the period from 2016 to 2020 in the Republic of Serbia

Year	2016	2017	2018	2019	2020
Total area of industrial hemp in Serbia in hectares	172.72	281.52	307.81	922.92	630.15
North region - Vojvodina	145.68	275.04	289.33	822.04	408.69
The rest of the Serbia	27.04	6.48	18.48	100.89	221.46

Source: Ministry of Agriculture, Trade, Plant protection directorate, 2020

Depending on the purpose of IH, it is divided into the following groups: oilseed hemp, fiber hemp, hemp products for pharmaceutical markets, and hemp products for recreational markets known as marijuana. Fiber and oilseed/grain hemp are collectively known as industrial hemp (Jelizkov et al., 2019).

Hemp belongs to the *Cannabaceae* plant family order *Cannabis* which originates from Central Asia. It is one of the very first plants in the world which humans started to use for other necessities except for clothes and food. According to previous researchers, this genus consists of only one species with several varieties:

- *Cannabis sativa* var. *vulgaris* (industrial hemp),
- *Cannabis sativa* var. *indica* Lam. (marijuana),
- *Cannabis sativa* var. *indica* Lam. subvar. *giganta* (giant hemp) i
- *Cannabis sativa* var. *ruderalis* Janisch (wild hemp) (Butorac, 2009).

If we consider the purpose of the plant, psychoactive/medical cannabis is

distinguished with the THC content higher than 0.3% and IH sorts with THC (delta-9 tetrahydrocannabinol) content lower than 0.3%. Content of psychoactive substance is the most common reason for controversy and marking this plant as a taboo topic.

IH and marijuana are from the same species of the plant but from different varieties. Two plants are genetically unlike, having different cultivation, use and chemical makeup. IH is defined as “the plant *Cannabis sativa* L. and any part of such plant, whether growing or not, with a delta-9 tetrahydrocannabinol concentration of not more than 0.3% on a dry weight basis” while marijuana falls under the U.S. drug law with high percentage of psychoactive substance THC (Johnson, 2018).

Only 5 species of IH are allowed in Serbia to be grown until now: Novosadska konoplja, Helena, Marina, Fedora 17, and Monoica (register of recognized varieties, 2021). Three of them are domestic Serbian species. There is no official data about the quantity of produced IH in Serbia in the last century. Therefore, the author of this paper contacted Ministry of Agriculture of Serbia and collected all official permits for production from 2016 to 2020. In the table below are unique information about the areas under IH in Serbia:

**Table 2.** Land area in hectares under different varieties of industrial hemp

Name of the varieties	Hectares by the year of cultivation				
	2016	2017	2018	2019	2020
Helena	25.14	90.38	151.95	726.06	219.79
Marina	0.00	0.00	0.00	0.44	5.06
Novosadskakonoplja	0.00	0.00	0.00	0.00	0.00
Fedora 17	94.80	188.79	113.63	193.67	402.86
Monoica	0.00	0.00	39.00	0.00	0.00
Sorts under the code	3.16	2.34	3.22	2.74	2.42

*Source:* Ministry of Agriculture, Plant protection directorate, 2020

According to *Table 2*. IH varieties, Helena and Fedora 17 are the most common varieties in Serbia. The usage of these two types are quite similar throughout Serbia and surrounding countries. Sowing depends on whether we want to get: fiber, a seed, or a flower (Burczyk et al., 2009). For anyone interested in producing hemp, it is important to understand that every single part of IH contains THC at a very low level (under 0.3%). Seeds, however, do not contain THC, the psychoactive substance. Essential oil extracted from IH also does not contain THC (United Nations, 2013).

### Branding of rural area

Considering that in Serbia most of the agricultural fields are in rural areas, the majority of the conversation topics are agricultural. Cultivation brand can be a great opportunity for marketing of the rural area. The process of globalization has brought to rural areas social, economic and environmental troubles and a struggle with competition. During globalization as inevitable force residents are leaving rural areas which reshape

the look of the region and habits of the rest of the population. This strong influence dramatically modifies these mentioned areas. Inhabitants are leaving searching and for a better life. Rural areas require a marketing strategy to develop products, bring in customers and, possibly, to attract tourists. When we are talking about place branding it is certainly based on the interaction between several stakeholders who are coming from different sides. One group of stakeholders are farmers and users of their products like consumers, retailers and processors. The second group is organizations and, very important stakeholder, governmental institutions. Public policies affects the environment in which companies and farms are working. There is no doubt that place branding can reshape economic and social structure of the rural area and it can be an instrument of strategic space planning for development (Donner et al., 2016).

Internal and external communications are needed to create a brand. Manufacturers are the ones who maintain the necessary consistency in communication. Companies, in our case producers, associations and consumers must have communication, which represents “branding triangle” (Bulatovic et al., 2016). Many rural areas are working on the concept of place branding, competition is quite high. Every place has its own branded product but it is very common to have the same or similar offer of infrastructure, program, landscapes, or agricultural food. They have to compete internationally and often in the global market. It is not easy to stand out and be more competitive than others. This is the chance for place branding to show full potential and the time when place branding became substantial. Definition of the place branding is the marketing of the place, region, city, or area, a promotional strategy which leads to increasing of the attractiveness of the place for spending vacation, for working and living. A regional brand can solve economic problems and give perspective to residents of the region including better quality of all contents of the region and branding of all regional segments as nature, heritage, domestic food and more. The identity of the region represents the brand of the region that creates value, promotes the region, and as a trademark encourages the development. It is the right way to productive, strong, sustainable, and developed rural area (Messely et al., 2010).

One of the examples of place branding is West Cork, in Ireland. This Southern Irish rural area is mainly composed of grass fields and is surrounded by the sea. Many people from other regions came here to work and live due to the aspiration to improve the quality of life. Despite a lack of an ideal geographical position, which is seen as disadvantage of the region, people who choose West Cork for their home are satisfied with original West Cork agricultural products, food, and collaboration between inhabitants. This luckily turns a disadvantage into an advantage. The greatest motives for West Cork have been cited as being the pride of the people of this region and their passion and love for their region. Local cooperatives uses the specific images that identify the region as the main tool of the rural development strategy of West Cork. Supported by European Union funds since 1995, through many different marketing staffs as flyers, brochures etc., Cooperative raises the inhabitants’ awareness of the exclusive qualities of the region (Messely et al., 2010).

Brand as a trademark of rural region can bring a lot of tourists. The influx of tourists opens up new entrepreneurial ideas, increases the quality of life and generates income. According to Dašić et al.(2020), rural tourism can solve economic and demographic problems and revitalize rural areas in Serbia. Countries around the world make different projects to attract investors, to bring tourists, to develop international partnership, to stimulate export, to create better and more attractive brands as a tool of marketing in an international environment. The same authors note that agritourism is special shape of rural tourism which allows guests to be part of everyday agricultural activities. They further quote Lin et al. (2011) who wrote about potential only in the villages where guests can follow full circle of making food starting from the field and finishing with setting a meal on the table. Service users are not asking for the price for the possibility to eat healthy food directly from nature and to experience a healthy life style. Authors underline that it will be very welcome to brand and inform through media the individuality of every single rural place just like Guča and Mokra Gora in Serbia (Dašić et al., 2020).

There are many rural areas financed to finish their projects successfully. Lot of places upgrade and adjust marketing to find buyers for their products. Marketing of the rural places is actually combination of political and public instruments (Donner et al., 2015). But what if rural area project is not financed by the government or some of international funds? Then one of the approaches is to be “self- branded” with product which attract attention of media, science, economic circles, consumers and curious people. IH is the answer. Just like it was in region Bačka, Municipality Odžaci and Bač in Serbia. Starting from the 18th century, together with the coming of baron Kotman in the city of Odžaci, hemp became main agricultural crop and medium which changed the picture of the region. Producing of the IH made significant economic progress of the region resulting of the first annual hemp trade in 1779. The number of factories and employees in this reproducing and processing was increased. Odžaci and hemp trade in this city were mentioned in European newspapers. Foreign factories were buying products from this region. The city was promoted to market town. New jobs like weavers, spinners and breakers start to appear, investors from abroad are coming to build new factories. Odžaci and surrounding rural areas were very well known for growing hemp. IH made economic progress of this places from 18th to second part of 20th century (Stojanovic, 2016).

### **Materials and methods**

Research included three main groups of stakeholders in IH production. In order to improve marketing potential of rural areas in Serbia through the cultivation of IH it is necessary to determine requirements of the market. Three major groups of participants were examined through the questionnaire: 10 farmers, 10 owners of selling markets (health-food markets) and 151 consumers (end-users of the hemp and hemp products). These groups have been selected because they are major constituents in the chain of harvesting and distribution, and are the main reason for Governmental department’s existence. A Google questionnaire was sent to the members of the above-mentioned groups. The questionnaire was conducted during March 2021. Results are presented through tables.

## Results and discussion

The first group of 151 randomly chosen participants in the survey of this research are by large majority interested in buying, consume and even to sow IH. Ratio between woman and man is almost equal (*Table 3.*). Huge differences between the ages of the participants is one of the positive features of the study (*Table 3.*).

**Table 3.** Ages and gender ratio of participants

Age	Number of participants	Percent %
Under 18	7	4,6
18-30	69	45,7
30-40	58	38,4
40-50	9	6,0
50+	8	5,3
Gender ratio	<b>Women</b>	<b>Men</b>
	81 (53.6%)	70 (46.4%)

Source: Author's research

A huge percent of the participants don't know the difference between marihuana and IH (*Table4. Q1*). According to the results it is obvious that many people identified these two varieties of cannabis as equal. For those two third of respondents talking about IH is the conversation about something illegal. Their first thought is secret, the illegal market of weed. A simple solution lies in educating them about IH, demonstrating the physical differences between the two brands, as well as mandatory random check-ups (Mašić, 2018).

This can be turned to benefit and enable good marketing of rural areas which can be presented and use IH production as a marketing tool. An additional fact is that most of the respondents consider this plant as healthy medicinal plant (*Table4. Q2*) and they are informed about CBD oil as a potential cure for several the most terrible diseases (*Table 4. Q3*). They would like to buy it easier in special IH stores or in the existing healthy food stores (*Table 4. Q4 and Q7*). This is in correlation with the absolute majority of the healthy food store owners' answers who would like to order IH CBD oil for their stores.

Results send clear message to authorities and entrepreneurs that it is a good idea to open new markets and enable easier access to products made of IH. The solution is to educate people through media marketing. Huge percent of people are not against IH advertisement and IH leaves, who look alike cannabis indica leaves, at the products packaging (*Table 4. Q5 and Q6*). Yielding of the mentioned plant should be an advertisement of rural areas (*Table 4. Q14*).

Investments are not enough to increase attractiveness of agricultural business in the rural areas. The rural way of life is like a social paradigm, which is developed under an influence of a whole set of non-economic factors: social, cultural, historical, ethnic, etc. (Erokhin, 2014).

**Table 4.** Consumer's questionnaire results

Question	YES	NO
Q1 Do you know the difference between cannabis indica and cannabis sativa (industrial hemp)?	58 (38.4%)	93 (61.6%)
Q2 Do you consider industrial hemp as medicinal herb?	118 (78.1%)	33 (21.9%)
Q3 Have you ever heard about CBD oil made from industrial hemp which, according to the expertise of the World Health Organization from 2017 (agenda item 5.2. in Geneva 6-10.November 2017), could help in the treatment of Parkinson's and Alzheimer's disease, cancer, multiple sclerosis, diabetes, inflammatory diseases, reises immunity etc.	101 (66.9%)	50 (33.1%)
Q4 Would you like to have easier ways to acquire CBD oil and their products made of industrial hemp?	128 (84.8%)	23 (15.2%)
Q5 Are you against hemp being advertised on TV, radio, social media or in newspapers?	19 (12.6%)	132 (87.4%)
Q6 Would you mind if industrial hemp leaf is being presented on the industrial hemp products?	20 (13.2%)	131 (86.8%)
Q7 Do you think that citizens of the Republic of Serbia need specialized stores of industrial hemp products?	103 (68.2%)	48 (31.8%)
Q8 Do you think that farmers should receive subsidies from the country in order to encourage the production of industrial hemp?	129 (85.4%)	22 (14.6%)
Q9 Do you think that the Ministry of Agriculture should be actively involved in advertising and encouraging citizens to produce industrial hemp?	118 (78.1%)	33 (21.9%)
Q10 Do you think that the Republic of Serbia is recording an economic loss as well as farmers and industry because the law does not recognize production of industrial hemp?	113 (74.8%)	38 (25.2%)
Q11 Do you think that the authorities in Republic of Serbia should organize educational television and radio shows about industrial hemp?	128 (84.8%)	23 (15.2%)
Q12 Would you produce industrial hemp?	78 (51.7%)	73 (48.3%)
Q13 Would you be willing to move to a rural area, produce industrial hemp, and live from that production?	78 (52.7%)	73 (48.3%)
Q14 Do you think that the production of industrial hemp in rural areas itself is an advertisement of a rural area?	118 (78.1%)	33 (21.9%)
Q15 Did you know that cold pressed hemp seed oil contains omega-3 and omega-6 acids in the best ratio for human health (2:1 - 3:1)?	41 (27.2%)	110 (72.8%)

Source: Author's research

The advertisement should be followed by the support of the authorities, together with new laws and subsidies from the Ministry of Agriculture in order to follow the growing interest of farmers and processors in IH (*Table 4. Q8, Q9, Q10 and Q11*). On that way, the economy of families living in the countryside and the development of rural areas would be stimulated.

More than half respondents are interested in producing IH and moving to a rural area doing hemp manufacturing for a living (*Table 4. Q12. and Q13*). IH is an unused marketing tool that can make greater picture of rural areas retrieving population and

bringing daily visitors, buyers and tourists. As much as 90% of the territory and 54% of the population are rural areas in Europe, while 52% of the territory and 23% of the EU population are predominantly rural areas (Zheliaskov et al., 2015).

Svetlana Ćirković interviewed inhabitants of the Eastern Serbia in 2019. The study shows their opinion about IH and made a parallel of past and present time. Eastern Serbia villages, around mountain Stara Planina are almost empty, deserted, without people or with only a few families left (e.g., villages Tatrašnica and Grabovica 3, Popratna 5, Staro Korito 23 residents). This is reality of most of the villages in this region. Larger villages have just over 300 inhabitants (Gornje Zuniče 420, Donje Zuniče 374, Debelica 333 residents). Inhabitants in these villages talked about hemp with nostalgia, they are connecting IH with happy times of their life when they made their own clothes out of the hemp. They used to sow, picked, dried, eaten seeds and made various garments from hemp fiber, and today they are listening on television that hemp is a drug. The author concludes that stigmatization of the hemp occurred in parallel with transformation of rural communities in this region through industrialization, migration to the cities and other properties of present time (Ćirković, 2019).

In Serbia, plots are being enlarged by residents selling rural land to the large companies and moving to cities. The Ministry of Village Care announces the donation of state rural land and houses in rural areas to young people and people who would like to return to rural areas (B92, 2021). Call for return of the population in rural areas we hear in other countries as well. Villages in Uttarakhand state in India are abandoned. People are leaving this region which could be saved with the cultivation of IH. Laws that allow sowing hemp would encourage farmers to return to their homeland and to earn enough for living through their work. Such a situation should also make a positive impact on the larger cities by lowered some burden to which the farmers had to migrate (Joshi, 2019).

Innovation can be a crucial step to make a brand of the agricultural product which leads to increasing competitiveness of rural place and which can make a final success. Innovation can also be some traditional, already existing product implemented into a service seen as new from the point of view of the group or the person who is the target group. Target groups are not only tourists or business related to tourism, but also investors, buyers, retail chain, competitors, factories, employees and processing companies. If the brand is one product, one idea or one innovation this place is thematic village subordinated to one, leading idea. The theme of thematic village, in most of the cases, is determined by some of the characteristics of the village, some cultural heritage, interesting of inhabitants or idea which is, or could become known (Sin et al., 2020). The theme discussed in this study is exactly one idea, one agricultural product, a plant which may become characteristic of rural area. IH can attracted public opinion in rural place and start development.

The above research shows that the potential of IH should be used as a means of marketing rural areas. People in Serbia, participants in this research, stated that marketing greatly affects their opinion and that advertising is crucial in changing opinions and educating people of something new, in this case IH (*Table 5. Q2*).

**Table 5.** Buyers' responses

<b>Question</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Q1 Rate your knowledge about industrial hemp. 1 (do not know anything) to 5 (excellent knowledge)	32 (21.3%)	47 (31.3%)	39 (26%)	21 (14%)	11 (7,3%)
Q2 How much marketing affects the change of awareness and education of citizens? 1 (does not affect) to 5 (huge affect)	2 (13%)	4 (2.6%)	19 (12.6%)	34 (22.5%)	92 (60.9%)

Source: Author's research

People in Serbia are not enough educated about IH (*Table 5. Q1*). Research results shows that even a questionnaire with the topic "industrial hemp" could be the way of marketing rural area and education tool. They can learn something through a questionnaire (*Table 6.*).

**Table 6.** Marketing through the survey

<b>Did you learn something from this questionnaire?</b>				
1 - nothing	2	3	4	5 - a lot
4 (2.7%)	8 (5.3%)	26 (17.3%)	45 (30%)	67 (44.7%)

Source: Author's research

Sellers are very important grummet in the IH production chain. Health food markets are stores with hemp goods. A minority of respondents are shopping in open markets and via catalogs and phones. These results say that people are still shopping the traditional way in the stores, but online shopping is also popular (*Table 7.*).

**Table 7.** Preferred way of shopping

	<b>Online</b>	<b>Open markets</b>	<b>Stores, pharmacy, health food stores</b>	<b>To get flyer and order by phone</b>
<b>Which way of shopping do you prefer?</b>	25 (16.6%)	5 (3.3%)	117 (77.5%)	4 (2.6%)

Source: Author's research

As the most popular place for getting goods author interviewed owners of 10 health-food stores in 4 cities in Serbia: Novi Sad, Beograd, Subotica and Niš. All of them answered that they have or used to have hemp products such as tea, protein, seed, hulled seed and other. Owners of the health-food stores supported opening of the IH market, as well as IH marketing on the TV, subsidies, and even 40% of them would like to produce this plant (*Table 8.*).

**Table 8.** Responses of health food stores owners

Questions	Yes	No
Q1 Do you consider industrial hemp as healthy medicinal plant?	10 (100%)	0 (0%)
Q2 Would you mind industrial hemp being advertised on television, radio, social media, in newspapers?	0 (0%)	10 (100%)
Q3 Would you mind that industrial hemp leaf is being presented on the industrial hemp products?	0 (0%)	10 (100%)
Q4 Do you think that it is necessary to expand the production offer of industrial hemp in health food stores in the Republic of Serbia in order to increase the production and turnover in "healthy foods"?	10 (100%)	0 (0%)
Q5 Do you think that farmers should receive subsidies from the state in order to encourage the production of industrial hemp?	9 (90%)	1 (10%)
Q6 Do you think that the Ministry of Agriculture should be actively involved in advertising and encouraging citizens to produce industrial hemp?	9 (90%)	1 (10%)
Q7 Do you think that the state should organize educational television and radio shows about industrial hemp?	9 (90%)	1 (10%)
Q8 Would you produce industrial hemp?	4 (40%)	6 (60%)
Q9 Would you order CBD oil for your health food store?	9 (90%)	1 (10%)

Source: Author's research

Average mark of 4.8 for the question, on a scale from 1 (does not affect) to 5 (huge affect), assess how much marketing does influence on the change of consciousness and education of citizens, shows that owner of health-food stores are sure about huge impact of marketing (*Table 9*).

**Table 9.** Responses of health food stores owners

Question	1	2	3	4	5
Q1 How much marketing does influence on the change of consciousness and education of citizens? from 1 (do not have influence) to 5 (many influence)	0 (0%)	0 (0%)	0 (0%)	2 (20%)	8 (80%)
Q2 Rate on a scale from 1 (not at all) to 5 (extremely sought after) how much do you think industrial hemp products are in demand? (and if you don't keep the products listed, answer how many customers are looking for these products)	0 (0%)	1 (10%)	4 (40%)	3 (30%)	2 (20%)
Q3 I have learned something from this questionnaire (score on a scale from 1 (nothing) to 5 (a lot))	0 (0%)	1 (10%)	2 (20%)	2 (20%)	5 (50%)

Source: Author's research

Producers are the third group of respondents. In total 10 producers have participated in the questionnaire. All of them produce flower, seed, and stems for sale. This is understandable because IH is insufficiently defined by law and is a taboo topic so, they don't process hemp and make products from the plant. A high majority of them would like to pay some kind of present advertisement and the same high percentage would like

to give interview to TV, radio or newspapers (*Table 10. Q11 and Q12*). If we compare with previously discussed group - customers, we have an even higher percentage of those who would live in a rural area and produce IH (*Table 10. Q1*).

**Table 10.** Producers of industrial hemp questionnaire responses

Question	Yes	No
Q1 Given that our fields are in rural area if the state provides open market, longer variety list and conditions for work and development of agriculture and processing of IH, would you be willing to move with your family in rural area?	7 (70%)	3 (30%)
Q2 Do you advertise your industrial hemp and industrial hemp products?	3 (30%)	7 (70%)
Q3 Do you exhibit at trade fairs?	0 (10%)	10 (100%)
Q4 As a visitor, do you go to industrial hemp and agricultural fairs in Europe?	3 (30%)	7 (70%)
Q5 Would you like to organize an industrial hemp fair in Serbia?	10 (100%)	0 (0%)
Q6 Would you like from the Ministry of Agriculture or the Serbian Chamber of Commerce to allow you to appear at fairs in Europe, as this is case with the producers in Croatia?	10 (100%)	0 (0%)
Q7 Do you think that successful and quality production and processing of hemp itself could be a rural area marketing?	9 (90%)	1 (10%)
Q8 Would you support the construction of a purchase center and a center for processing industrial hemp in a rural area of the Republic of Serbia?	10 (100%)	0 (0%)
Q9 Would an association of industrial hemp producers yield stronger and more competitive production in rural areas?	10 (100%)	0 (0%)
Q10 Would you like to have a database of IH producers and purchasers available to everyone?	10 (100%)	0 (0%)
Q11 Would you like to advertise your IH production in the social media?	9 (90%)	1 (10%)
Q12 Would you like to give an interview about the production of industrial hemp for newspapers or radio?	9 (90%)	1 (10%)
Q13 Would you like the production of CBD oil, cold-pressed oil, consumer food for people from IH seeds, etc. to be defined by law in Serbia, and for everyone to be able to produce and be competitive on the market of Serbia and Europe?	10 (100%)	0 (0%)
Q14 Do you think CBD oil is healthy and it can be used as a cure?	10 (100%)	0 (0%)
Q15 In your IH, according to the law of Serbia, it must not contain more than 0.3% THC (tetrahydrocannabinol), and in human food from IH it must not contain more than 0%, but it is not defined how much it is zero, whether is up to 0.9% or to the fourth decimal place (0.0001%) or something third. Do you think that this law is meaningless, considering that the technology has advanced and that it needs to be corrected and precisely defined?	10 (100%)	0 (0%)
Q16 Did you learn something from this questionnaire?	7 (70%)	3 (30%)

Source: Author's research

A very high percentage of producers are interested in visiting and exhibiting at trade fairs but also to have backing in Ministry of Agriculture as it is in the Republic of Croatia (Croatian Chamber, 2019)(*Table 10. Q from 2 to 6*). The same Ministry should submit a database with IH statistics for the current year. All producers would like to be informed by post or by mail about the data on how many hectares of IH has been sown in the current year, how many seeds have been consumed and which varieties, how much biomass has been produced, etc. (*Table 10. Q10*). Opinion 100% of them is also that CBD oil is healthy and Serbia needs new laws which will define the allowable percentage of THC in food derived from IH (*Table 10. Q14 and Q15*). The suggested level could be 0.3%.

Producers agree with customers that new laws and defining hemp food products are necessary to enable production (*Table 10. Q13*). Huge help for them could be representative association and IH redemption place as some kind of safe house and secure placement of the products (*Table 10. Q8 and Q9*). Most of producers are convinced that producing of industrial hemp is the marketing for itself (*Table 10. Q7*).

### Conclusions

According to the results, the majority of all three groups of respondents agree that the working with IH itself is an advertisement for the rural area. It is obvious that they would live, together with their families, in rural areas and engage in cultivation if the Republic of Serbia allow for the development, production and processing of IH. The buyers are not well educated about the difference between IH and Indian hemp (marijuana) and they identify these two plants which confirms its controversy. The same group confirms that IH would advertise a rural area. Such advertising would lead to tourist, business and other visits to the rural area, as a result of which there would undoubtedly be an influx of money, and thus the development of the rural area. Therefore, this study may be used as a first step in education of the wider public about the benefits of the IH production. On the other hand, limitation of this study may be the limited number of participants in the questionnaire, which is influenced by controversy of this subject in the Republic of Serbia. Further studies could follow whether the areas under IH have a tendency to fall or increase and how the awareness of the production and processing of IH in these three groups is changing.

### Conflict of interests

The authors declare no conflict of interest.

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