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SMART SPECIALIZATION – INDUSTRIAL HEMP

PAMETNA SPECIJALIZACIJA - INDUSTRIJSKA KONOPLJA

ABSTRACT

The notion that out of 3.15 million hectares of agricultural land in the Republic of Croatia, only 63% is cultivated, while the rest are grazing fields, and that plains mainly stretch in the area of temperate continental climate is a solid natural foundation for proposing a theory of a new trend in economic development, more precisely in the field of smart specialization, i.e. the come back of Cannabis sativa to the farming land of Croatia.

Upon reviewing the historical facts related to the cultivation and use of hemp on the territory of Europe from the Neolithic to becoming the legal means of tax payment in America in the 18th century and honouring the fact that, in the 60s, Yugoslavia was the sixth largest producer and exporter of hemp in the world and that, in those years, about 9,000 hectares of the territory of the Republic of Croatia were in hemp, the idea about developing a model that has already been tried and tested throughout history crystallized. The fact that over 25,000 different products such as biodegradable plastics, lightweight building panels and insulation materials can be derived from hemp speak in favour of this idea, as well as the fact that its natural biomass could cover the entire energy demand that is presently met by oil and that its seeds are unparalleled in their nutritional value as well as being an impressive source of minerals and vitamins.

With the proposed amendments to legislative regulations relating to the cultivation of Cannabis sativa hope is slowly restored to demotivated producers who, according to the present rules and a strict procedure, may only use the seed, while destroying the stem, but the uninformed public still remains a big issue. The presentation of the thesis of „the uninformed public“, which is a reflection of a long negative campaign targeted at hemp, and the confirmation of this premise via a survey conducted among the senior students of the high school and Polytechnic of Požega, naturally lead to the idea of a comprehensive campaign.

The conclusion proposes a cardinal turn in the approach to hemp through the execution of a model introducing the public to its potentials and possibilities of use, utilizing the elements of a communication mix while implementing the results of the conducted survey.

Key words: industrial hemp, smart specialization, legislation, public, marketing campaign

SAŽETAK

Spoznaja da se od 3,15 milijuna hektara poljoprivrednih površina u Republici Hrvatskoj obrađuje samo 63%, dok su ostalo pašnjaci, te da se ravnice prostiru pretežno na području s umjerenom kontinentalnom klimom, dobra je prirodna osnova za postavljanje teorije novog trenda u razvoju gospodarstva i to na području pametne specijalizacije, tj. povratku industrijske konoplje (lat. Cannabis sativa) na poljoprivredne površine u Hrvatskoj.

Pregledom povijesnih činjenica vezanih uz uzgoj i upotrebu industrijske konoplje od mlađeg kamenog doba na području Europe, do zakonskog sredstva plaćanja poreza u Americi u 18. stoljeću, te poštujući činjenicu da je 60-ih godina Jugoslavija bila šesti najveći proizvođač i izvoznik industrijske konoplje u svijetu i da je tih godina na području RH bilo zasijano preko 9 000 hektara konoplje, jasno se javlja ideja o razvoju modela koji je već dokazan kroz povijest. Ovoj ideji ide u prilog i podatak da se od industrijske konoplje može proizvesti preko 25 000 različitih proizvoda, poput biorazgradive plastike, laganih građevinskih ploča i izolacijskih materijala te da bi njezina prirodna biomasa mogla nadoknaditi sve energetske potrebe koje se danas zadovoljavaju naftom, a da su njezine sjemenke bez premca u hranjivosti te impresivan izvor minerala i vitamina. Prijedlogom izmjena zakonske regulative vezane uz uzgoj industrijske konoplje polako se vraća nada demotiviranim proizvođačima, koji prema sadašnjim pravilima uz strogu proceduru smiju koristiti samo sjeme dok se stabljika mora uništiti, ali neupućena javnost i dalje ostaje velik problem. Izošenjem problemske teze „neupućene javnosti“, koja je odraz godinama provedene negativne kampanje usmjerene prema konoplji, i potvrđivanjem teze kroz anketu polaznika završnih razreda srednje škole i Veleučilišta u Požegi, nameće se ideja o potrebi sveobuhvatne kampanje.

U zaključku se predlaže kardinalni zaokret u pristupu industrijskoj konoplji kroz realizaciju modela upoznavanja javnosti s njezinim potencijalima i mogućnostima iskorištavanja, a koristeći elemente komunikacijskog miksa uz implementaciju rezultata provedene ankete.

Ključne riječi: industrijska konoplja, pametna specijalizacija, zakonska regulativa, javnost, marketinška kampanja.

1. Basic assumptions

The main characteristic of Croatia is best recognized in the variety of climate, relief and soil types, which also enable a wide array of agricultural products, from Mediterranean crops and sorts to the continental ones.

Correlation facts that in the RC agriculture and fishery share in the total GDP with a total of 7.6% and that out of a total of 3.15 million ha of agricultural surface area only 63% is cultivated, confirm that there is space for strong development of agricultural production with emphasis on the introduction of smart specialization.[1]

A plant which deserves attention in terms of smart specialization and reappearance on the agricultural surfaces of Croatia is precisely hemp (*Cannabis sativa*).

This statement is best confirmed by reviewing historical facts related to the cultivation and use of *Cannabis sativa* since the Neolithic Period on the European territory to making it the legal means of tax payment in America in the 17th and 18th century and honouring the fact that, in the 60s, Yugoslavia was the sixth largest producer and exporter of hemp in the world and that, in those years, about 9,000 hectares of the territory of the Republic of Croatia were in hemp.

Table 1 shows a considerable decrease in the quantity of textile fibres manufactured out of *Cannabis sativa* in the period of a hundred years.

Table 1 Production of industrial plants in Croatia 1900-2003

Five years	Oil crops (000 tons)			Sugar-beet (000 tons)	Tobacco (000 tons)	Textile fibres (000 tons)	
	Rape	Sunflower	Soy			Hemp	Flax
1900-4	5.2	1.3	1.8	9.7	4.2
1935-9	3.4	0.2	..	101	0.6	9.2	4.7
1951-5	3.2	11.9	0.7	261	0.9	9.9	1.8
1985-9	44.5	51.1	50.4	1.176	17.9	0.4	0.4
1990-4	27.4	41.8	50.3	821	10.5	0.2	0.1
1995-9	20.4	57.3	60.6	961	10.7	0.1	0.0
2000-3	26.5	57.2	92.3	827	10.5	0.0	0.0

Sources: I. Stipetić: *Biljna proizvodnja u Hrvatskoj 1885-1990, Agrarno-ekonomske studije, vol. 1, Zagreb 1991* and *Statistički ljetopisi Hrvatske (for the period 1990 – 2003)* [2].

Although extremely important in production and processing terms, hemp lost its place among leading plants according to their exploitation.

Information that hemp can be used to produce over 25 000 different products such as paper, biodegradable plastic, lightweight building panels and insulation materials speaks in favour of this idea, as well as the fact that its natural biomass could cover the entire energy demand that is presently met by oil is additional food for thought regarding the possibilities this plants has to offer today, which has led to research being conducted here as well, with the aim of obtaining the highest quality raw material for construction materials. [3]

If we take the plant as a whole, the bark of *Cannabis* has the longest and the strongest fibres of all plants and they are also elastic, long-lasting and water-resistant making them a natural choice for the production of cordage, ropes, sails, clothes, shoes, tarpaulin, tents, fire hoses and similar products. The woody part of the plant is used for the production of cellulose, insulating material, as well as for firewood, while its seeds are unparalleled in nutritional value, an impressive source of minerals and vitamins and a raw material for the production of oil that is used as food but also in the production of cosmetic products.

2. Legal regulations

The term *Cannabis sativa* is frequently wrongly interpreted and presented because it is mixed up with a different type of *Cannabis* – *Cannabis indica*.

The Draft of the Act on Amendments to the Drug Abuse Prevention Act, proposed by Mirela Holy, D.Sc., a representative in the Croatian Parliament, is a testimony to this. More precisely, said Draft only mentions the term "*Cannabis*", which shows that even on the level of proponents of legal regulations these terms are communicated unclearly.

The proposal is also unclear in defining what types of *Cannabis* and under what conditions can be cultivated, processed and marketed, which could lead to uncontrolled and unpunishable cultivation and use of marijuana (*lat. Cannabis indica*) for the so-called private use and the possibility of placing marijuana on the market in a virtually free, uncontrolled and unpunishable way. [4]

Besides terminology dilemmas, the stumbling block in the development of *Cannabis sativa* management is the applicable legal regulation. The current legislation regulating the cultivation and processing of *Cannabis sativa* is based on the Drug Abuse Prevention Act (OG [107/01](#), [87/02](#), [163/03](#), [141/04](#), [40/07](#), [149/09](#), [84/11](#), [80/13](#)) where Article 13 defines the adoption of the implementing regulation, i.e. the Rulebook on the conditions for *Cannabis* cultivation, the method for poppy cultivation registration and the conditions for possession of drugs in veterinary activity (OG [18/12](#)).

With regard to the Rulebook in question (Rulebook Articles 1-7), prescribing that the licence for the sowing and cultivation of *Cannabis* issued by Minister of Agriculture is obtained for only one year of sowing, which is also the current production year, we can assert that it is an administrative aggravating circumstance, as well as the fact that the permit is issued exclusively for the cultivation of *Cannabis* for nutritional purposes. The stem of *Cannabis sativa*, which has great potential in processing industry, unfortunately has to be ploughed in or burnt after the seeds are gathered according to applicable regulations of the RC. In addition, it should also be noted that said implementing regulation states exactly that the percentage of THC (Tetrahydrocannabinol) in the dry matter of the plant may not exceed 0.2%, which is very questionable since it is an element which is variable depending on the environmental conditions (the amount of sunlight, etc.) in which the plant is developing. That variability dependant on the environmental conditions is even more pronounce when we know that seeds of *Cannabis sativa* are not available in Croatia and that it is imported from other countries according to the Common Catalogue of the European Union, including Scandinavian countries well-known for its small amount of light. [5] [6] [7]

3. International trends vs. production of Cannabis in the Republic of Croatia

In the past 15 years, interest for *Cannabis* in developed industrial countries has gradually started to grow again. So, today in Europe *Cannabis* fibres are used in automotive industry for the production of plastic parts and in the production of cigarette paper, banknotes, hygienic products, etc. They are also used in the production of insulating materials and as cement additive. [8]

In 2012, 12 growers/producers of *Cannabis sativa* were recorded in the Republic of Croatia, a year later the number of growers rose to 32, while at the end of 2014 over 100 growers were recorded and *Cannabis sativa* covers 658 ha of agricultural land in the RC. [9]

Some of the national growers and processors of *Cannabis sativa*, who systematically grow and invest in further production and processing, are Herbio plus, CannaBio, etc.

4. Uninformed public – the need for a comprehensive media campaign

Historical traces, such as Biblical paper, artwork of the most famous painters, clothing, ship ropes, sails, etc. speak of *Cannabis sativa* being grown for several thousands of years, more precisely different types of *Cannabis* and in different variations on all continents. Depending on the climate, the species, i.e. the subspecies of *Cannabis*, also varied and hence its use as well.

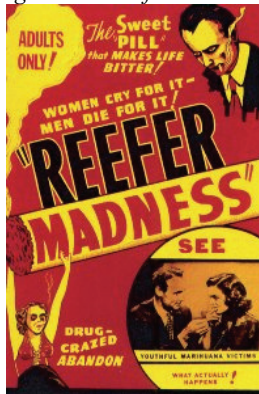
Nevertheless, the present role of *Cannabis* in the world is reduced to an extremely low level, due to existing legal regulations, but also the overall negative media campaign that was carried out at the beginning of the last century when the most influential media were newspapers and the radio, and the contemporary media such as Internet did not exist. Then, an individual could not independently check the information obtained through the mass media, which was trusted blindly. The best indicator of that is the campaign by wood and oil lobbies which started in the 30s of the last century in America. Namely, it was a moral campaign for the prohibition of “marijuana”, which was instigated by Harry Aslinger and the Federal Bureau of Narcotics, spreading it in the main American tabloids via ordered articles, flyers and movies (Images 1 and 2).

Image 1 Propaganda flyer from the 1930s



Source: http://www.druglibrary.org/mags/aapicture/film_posters7.htm

Image 2 American propaganda movie from 1936 aimed at high-school kids



Source: http://en.wikipedia.org/wiki/Reefer_Madness#/media/File:ReeferMadnessPoster.jpg

They used the campaign in their testimonies before the Congress without scientific proof, based on which a law was passed in 1937 on taxing the production and sale of *Cannabis*, which made it completely uninteresting to the producers since it was unprofitable. The campaign continued with greater or lesser intensity over decades. [10]

Scientific and other literature says that complete legal regulations implemented in America also shaped the international policy towards drugs, which resulted in the adoption of decisions, which installed *Cannabis* as a dangerous and harmful plant in the international conventions conclusively with the UN *Single Convention on Narcotic Drugs* from 1961. [11]

At the beginning of the 20th century, public knowledge about *Cannabis* was diffuse and, today, the common names distinguishing between its narcotic and other features are completely obscure.

A long-term campaign that spread throughout the world succeeded, and, unfortunately, it has become apparent that the young generations today don't distinguish between the types of *Cannabis*, are not familiar with the historical component of *Cannabis sativa*, nor its characteristics and numerous possibilities in processing and nutritional terms.

5. Conducted research results analysis

A method of inquiry was used in the paper, i.e. polling, with the aim of obtaining information, which was then processed. The information obtained from the anonymous poll conducted has been processed using the descriptive statistics method. This research used a modified questionnaire (Table 2) for the questioning of participants in this research and it was anonymously filled in by 83 senior students of the Economics High-School and Polytechnic in Požega, of which 60 students were female (72,29%) and 23 were male (27,71%). Such a sample of young people was chosen because this population uses the Internet for several hours a day, thus having access to a sizeable amount of information. The questionnaire was used to determine to what extent the respondents were familiar with the term *Cannabis sativa* and its historical role, properties and possibilities, as well as the need for additional information.

According to the conducted research, out of the total number of respondents (N=83), 33 (39.76%) of them claims that they know the difference between *Cannabis indica* and *sativa* and as much as 50 (60.24%) does not. It is heartening that information about *Cannabis sativa* is after all present in the media since 53 respondents (63.86%) “heard” about the plant in the past year.

As many as 64 (77.11%) individuals who filled in the questionnaire are generally or completely unfamiliar with the properties of *Cannabis sativa* or now a little bit, while 76 persons (91.57%) do not know that in the 1960s Yugoslavia was the sixth producer and exporter of *Cannabis sativa* in the world.

Table 2 Questions used in the poll conducted and its results

1. Do you know the difference between *Cannabis indica* and *sativa*?

YES	NO
39.76%	60.24%

2. Have you noticed *Cannabis sativa* being mentioned in the media in the past year?

YES	NO
63.86%	36.14%

3. To what extent are you familiar with the properties of *Cannabis sativa*?

COMPLETELY UNFAMILIAR	GENERALLY UNFAMILIAR	NEITHER FAMILIR / NOR UNFAMILIAR	MOSTLY FAMILIAR	COMPLETELY FAMILIAR
24.10%	20.48%	32.53%	20.48%	2.41%

4. Do you know that in the 1960s Yugoslavia was the sixth producer and exporter of *Cannabis sativa* in the world?

YES	NO
8.43%	91.57%

5. How many products do you think can be produced from *Cannabis sativa*?

UP TO 100	FROM 101 TO 5 000	FROM 5 001 TO 15 000	OVER 15 000
15.66%	53.01%	15.66%	15.66%

6. Do you know that biodegradable plastics can be produced out of *Cannabis sativa*?

YES	NO
22.89%	77.11%

7. Are you familiar with the fact that *Cannabis sativa* does not require herbicides or pesticides during its cultivation?

YES	NO
30.12%	69.88%

8. To what extent, in your opinion, natural biomass of *Cannabis sativa* can replace the energy demand presently met by oil?

IT CANNOT REPLACE IT AT ALL	IT CAN REPLACE IT ONLY PARTIALLY	IT NEITHER CAN / NOR CANNOT (I don't have an opinion)	IT CAN REPLACE IT MOSTLY	IT CAN REPLACE IT COMPLETELY
14.46%	19.28%	42.17%	18.07%	6.02%

9. Have you tried /used products made out of seeds of *Cannabis sativa* (oil, beer, liquors, cookies, hygiene products, etc.)?

YES	NO
20.48%	79.52%

10. Since *Cannabis sativa* is considered to be the "plant of the future" do you want to know more about its properties and possibilities of use?

YES	NO
78.31%	21.69%

11. In what way do you want to be introduced to the properties and possibilities of *Cannabis sativa* use?

VIA PUBLIC MEDIA (TV, RADIO, ETC.)	VIA FAIRS AND EDUCATIONAL WORKSHOPS	VIA DIRECT COMMUNICATION (TELEPHONE, MAIL, E-MAIL)	VIA INTERNET MARKETING (ARTICLES, BANNERS, ETC.)	VIA AFFIRMING ARTICLES ON THIS SUBJECT (NEWSPAPERS, PORTALS, THEMATIC MAGAZINES)
49.40%	20.48%	6.02%	14.46%	9.64%

Sources: Authors

The respondents are also modest in estimating how many products can be produced from *Cannabis sativa*, i.e. only 13 (16.66%) state that this is a number exceeding 15,000 products. Respondents don't believe that *Cannabis sativa* can be used to produce biodegradable plastic, 64 (77.11%), nor that it doesn't require herbicides and pesticides in its cultivation, 58 (69.88%). Only 5 (6.02%) of the respondents believe that natural biomass of *Cannabis sativa* can completely replace the energy demand that is presently met by oil, and most of them have not tried its products, 66 (79.52%), but the majority, i.e. 65 (78.31%) of the persons polled want to know more about *Cannabis*.

6. Communication mix

In view of the results of the implemented poll, the idea of a comprehensive campaign is becoming apparent. The campaign would be based on the elements of a marketing communication mix.

"Marketing communication mix (also called a promotional mix) consists of five main forms of communication:

- *Advertising*
- *Public relations and publicity.*
- *Sales promotion*
- *Personal sales*
- *Direct marketing:* " [12]

A communication mix is offered in the poll through techniques and methods of communicating messages adapted to the product in question.

Since almost 80% of respondents expressed a wish to get additional information on the properties and possibilities of using *Cannabis sativa* and 70% of them wants to receive information via public media, fairs and educational workshops, communication should be based precisely along the lines of said techniques and methods of communication.

7. Conclusion

A cardinal turn is suggested in the approach to *Cannabis sativa* through a realization of the model of introducing the public to its potentials and possibilities of use, using elements of communication mix with the implementation of the results of the conducted poll. The poll confirmed the set hypothesis that the young population today does not distinguish between the types of *Cannabis*, is not acquainted with the properties and historical role of *Cannabis sativa* in our region and is not familiar with the possibilities of use and exploitation of it. It also discovered that the polled population wants to learn more about the subject in question, mostly via public media.

Due to the flexibility of newspapers (printed and digital form) as a medium and their good coverage of the local market, a coordinated campaign is needed in the form of a column and feature articles. Furthermore, low costs of radio as a medium, its mass use and "unobtrusiveness" to the listener, should be used in the form of organizing specialized shows on the subject of educating the public. Contrary to the above said, high costs of TV advertising can be compensated by encouraging panel discussions and roundtables on the given subject with the participation of eminent professionals, but also representatives of legislative bodies, all with the aim of bringing back *Cannabis sativa* to the agricultural areas of the RC through smart specialization.

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