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POTENTIALS OF MOUNTAINOUS REGION OF SERBIA FOR MAP SECTOR DEVELOPMENT

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Abstract

Apart from mineral raw material and energetic resources, soil quality, relief characteristics and hydro-potentials, natural resources also comprises for landscape characteristics as well as geographic position and biological diversity. Medicinal and aromatic plants (MAP) as a resource, is a component of the natural environment that may play an important role in structuring of spatial, social and economic rural areas that belong to mountainous region of Republic of Serbia. These areas are blessed with numerous resources (climate, soil, biodiversity, labour, etc) that are prerequisite for development of MAP sector; although they are not adequately utilised. Territory of Serbia, as a part of Balkan Peninsula, is one of the most important biodiversity centres and medicinal plants belong to economically the most significant ones in its flora. MAP sector encompasses production processing units, competent personnel as well as institutions that may support it and improve business on domestic market. MAP business is linked to certain regions of the country where the purchase is well organized: in the South-East part of Serbia collection of MAP has a long tradition, while in Vojvodina – there is a large-scale MAP production. General recommendations are: to increase surfaces under wild MAP collection within collection areas and to introduce large-scale MAP production in mountainous regions of Serbia. At the moment, there is no good concept of sustainable collection, processing and marketing in the MAP sector of Serbia.

Key words: MAP, resources, mountainous region, market potentials, MAP sector.

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Introduction

Serbia is situated on Balkan Peninsula, encompassing territory from Pannonia lowland on the north to the south-Balkan high mountains that belong to Dinaric and Shara-Pindic system on the South, encompassing 88766 km of soil surface. Geographic position of Serbia is very specific and it is characterized by geo-morphological, geological and pedological diversity and influenced by different climates that altogether brought about richness in genetic, species, and ecosystem diversity, making Serbia one of the most important biodiversity centres on Balkan Peninsula. In Serbian flora, medicinal plants become economically very important. With ca. 700 plant species that possess medicinal characteristics, it is obvious that this region represents an important medicinal and aromatic plants (MAP) biodiversity centre. Ca. 400 MAP species is in use and ca. 250 is in regular turn-over. The structure of turn-over of MAP species depends on their presence in each particular region of the country. In the mountainous region of Serbia a huge number of MAP species grows spontaneously and there is an interest for organized MAP purchase. Market demands dictates structure and quantity of demanded MAP species (whether collected from the wild or cultivated), as well as their price. The local market is also influenced by specific MAP demands on the World market. Since Serbia has very long tradition as a MAP exporter, there is no doubt that we have to increase quantities of MAP plant material and this can be accomplished by extending surfaces under MAP species (both, wild collected and cultivated), to some other regions of the country, especially in mountainous one.

Resources of significance for MAP sector in Serbia

The word “resource” derives from French word *ressource* (source) and represents a source of material power that provides raw material important for economy and that is used as a source of income and profit. Natural resources, as a component of the nature, may significantly influence formation of spatial, social and economic structure. Apart from mineral raw material and energetic resources, soil quality, relief characteristics and hydro-potentials, natural resources also comprises for landscape characteristics as well as geographic position and biological diversity. Republic of Serbia holds numerous resources (climate, soil, labour, biodiversity, etc), prerequisite for MAP sector development. Significant soil potential of 5093000 ha of entire agricultural land, 5056000 ha represent arable land, 3602000 ha is cultivated (64,8% plowed fields and gardens, 4,7% orchards 1,1% vineyards, 12,2% meadows and 16,4% pastures).

Meadows and pastures are natural habitats for a great number of MAP species and a potential source of MAP raw material. According to some estimates, ca. 5000 ha in Serbia is covered by different wild MAP species. Surfaces under cultivated MAP were always planned as to not exceed 15000 ha, in order to avoid making surplus of MAP raw material. Data on surfaces under MAP in Serbia differs significantly, depending on the source of information. Surface under MAP cultivation in Serbia stands for ca.

1% of arable land and it is almost not worth mentioning in comparison to some other crops that are traditionally grown in the country. MAP production is mainly present on individual farms and it is mainly organized on small parcels, what is a general characteristic of MAP sector in Serbia. For cultivation of some MAP species, a lot of manpower has to be engaged, what makes this kind of production more expensive. On the other hand, private sector is the one that possesses manpower and therefore is capable to keep these people employed. Thus, MAP seems to be a good solution for small agricultural ownerships. Intensive MAP cultures may provide income and profit for small, family ownerships in field of primary MAP production as well as for bigger estates, specialised in MAP processing and export trade.

Labour force accompanied with human capital are resources that are very important for each community and it is one of the key factors in development of agro-economy and the entire national economy. Following the famous “land reform” that was carried out in Serbia in 1991, the land reserves of some households have significantly increased. There is a great number of farmers that express their interest to replace some traditionally grown crops and to try to introduce some new crops in the culture. MAP production might be a good choice for this, especially for private ownerships of rural mountainous areas of Serbia. The main limitation in the fast development of this activity in rural areas is relatively small number of vital individual farms, especially in the high-mountain villages. In sparse households of mountain villages mainly live older people while the younger ones have insufficient knowledge on medicinal plants or they are not enough interested in this activity.

Presented economic situation in the recent years caused variability of the number and structure of MAP pickers and producers, since it depended on seasonal job offers and market demands for medicinal plants. In MAP sector, pickers are usually unemployed people or employed individuals whose main job does not provide essential existence.

During 1990-ies, due to numerous economical difficulties, political turbulence and war circumstances, drastic decrease in average fertilizers consumption has occurred. Use of chemicals in agricultural production is still prerequisite for achievement of certain economic results. On the other hand, controlled production, according to GAP standards, with a minimal or without the application of mineral fertilizers, we can use as a great opportunity to start producing healthy and safe MAP row material.

Perspectives of MAP sector in the mountain region of Serbia

According to estimates, there are ca. 4000 organized LAB picker - families in Serbia, what accounts for ca. 12000 MAP pickers. Besides, there are also periodical pickers whose activity has a lower economical significance and they are participating in cases of an increased MAP demand or when prices for collected plants are higher than usually. There are also pickers in rural and urban regions that collect MAP for their own use or for a direct sale on green markets. How many pickers are there in the last two picker-categories is difficult to estimate. Due to present unemployment, so characteristic for period of transition that our country is undergoing through, great number of households

needs some extra incomes that might be provided by some additional activities, such as collecting MAP from the nature. This job can provide economic survival of poor families. Open conversation with several MAP enterprise owners reveal that daily wages for worker in large-scale production of MAP range from 10 to 20 €, while pickers of wild growing MAPs can earn from 20 to 50 € per day, for dry MAP row material. Some enterprises organize picking of MAP and pay per kilogram of freshly picked MAPs, where skilled pickers may earn even 50 € per day.

Collection of MAP and forest fruits from the wild is an integral part of activity of many village households, especially in hilly-mountainous region of South-East Serbia, and this is the most available form of activity of MAP sector. South-East Serbia (communities: Svrljig, Knjaževac, Sokobanja, Boljevac, Aleksinac, Gadžin Han, Pirot, Surdulica, etc) has differentiated itself as a part of the country that is engaged in purchase and primary processing of MAPs and some enterprises also specialized for herbal tea production. Initiator of all activities regarding MAP in that region was Slovenian enterprise “Kirka” that has constructed its production unit in Svrljig. Now, many enterprises operate in this region: “Plantamel”, “Jeligor” and “Iris” in Svrljig, “Sanicula” in Gornja Mutnica close to Paraćin, “Betula” in Žitkovac close to Aleksinac, “Adonis” in Sokobanja, “Srbija-šume” in Knjaževac and Boljevac. In the central part of Serbia, it is worth to mention “Tilija” from Čačak, “Malina-impex” from Valjevo, “Drina Pak” from Ljubovija, etc. Enterprises from central and western parts of Serbia did not manage to develop organized purchase nor MAP cultivation, so they acquire MAP row material from other enterprises. Number of enterprises operating in MAP sector is far bigger and the activity in which they are engaged in and localities where they are settled cover the entire country. They are potential actors in extending the areal of MAP cultivation and wild collection. Special attention should be focused on expanding surfaces under cultivated MAPs in hilly-mountainous region of the country in order to provide more economic supplies of other regions in Serbia with god quality MAP row material.

Table 1. Plant species that might be collected from the mountainous region of Serbia

Plant species	Drug	Price (RSD)
<i>Angelika archangelica</i>	radix	300
<i>Rubus fruticosus</i>	folium	100
<i>Sambucus nigra</i>	flos	450
<i>Tillia sp.</i>	flos	450
<i>Tussilago farfara</i>	folium	210
<i>Urtica dioica</i>	folium, radix	105
<i>Vaccinium myrtillus</i>	herba	100
<i>Viscum album</i>	herba	100
<i>Rosa canina</i>	fructus	110
<i>Quercus sp.</i>	cortex	100
<i>Primula officinalis</i>	radix	400

<i>Ononis spinosda</i>	radix	180
<i>Juniperis comunis</i>	fructus	80
<i>Inula helenium</i>	radix	160
<i>Equisetum arvense</i>	herba	100
<i>Crataegus monogyna</i>	flos	105
<i>Centaurium umbellatum</i>	herba	140
<i>Betula pendula</i>	folium	100
<i>Arctium lappa</i>	folium /radix	90/180
<i>Agrimonia eupatoria</i>	herba	80
<i>Artemisia absinthium</i>	herba	90
<i>Teucrium chamedrys</i>	herba	100
<i>Teucrium montanum</i>	herba	135
<i>Taraxacum officinale</i>	folium/radix	150/300
<i>Melissa officinalis</i>	herba	100
<i>Thymus serpyllum</i>	herba	130
<i>Origanum vulgare</i>	herba	95
<i>Satureja montana</i>	herba	140
<i>Hypericum perforatum</i>	herba	95
<i>Achillea millefolium</i>	herba	95
<i>Plantago lanceolata</i>	folium	100
<i>Valeriana officinalis</i>	radix	250

Information source: pricelist form IMPR „Dr Josif Pančić”

Serbia possesses resources in the mountain regions that are still unexploited regarding natural, production and market possibilities of its MAP sector. Organised purchase of MAP in wider region of the country as well as expanded large-scale MAP cultivation in this region greater quantities of MAP row material might be achieved what would result in increase of MAP export. Reachable aims are final products with defined origin. Organic model of MAP production (collection and cultivation) has to be emphasised. Volume of the purchase and processing of organic MAPs depends on yields that fluctuate. Since organic MAPs represent “first-class” products, very demanded on foreign market, essential preconditions, such as continuity in the offer and quality must have been satisfied, in order to provide solid and permanent incomes for the labour.

Excessive *in situ* MAP exploitation represents a great danger for natural resources in Serbia. It is important to preserve MAP biodiversity. Correct estimates of natural resources and degree of biodiversity endanger, facilitate discovery of the proper approach as how to appease gap between profit and MAP sector development that respect biodiversity. In order to develop MAP sector, collaboration on MAP conservation throughout education of pickers about correct picking and cultivating techniques as well as on providing financial support to stimulate new primary MAP producers and encourage pickers to start producing plants that might be produced. During education, pickers and producers should be warned on possible consequences caused by biodiversity loss and

reminded on significance of biodiversity for entire community.

Exaggerated exploitation of MAPs in Serbia could jeopardize biodiversity. Increased demand for MAPs boost threat of excessive picking from the nature, thus the amounts of collected MAPs should be increased with appropriate measure. Present organizations of MAP pickers should be reinforced in such a manner to be able to actively contribute to determination of MAP quotas, since the current ones are still very restrictive toward this sector. Standard in collecting and cultivating of MAPs should be introduced, as well as organic MAP production, since it represents a great chance for gaining added value of product that certainly should be used.

Cultivation of MAPs in satisfying agro-ecological conditions of mountainous regions, that can provide achievement of high yields and suitable amount of biologically active principles certainly has priority over collection of plant material from their natural stands, due to a several reasons: rational utilisation of agricultural soil resources inappropriate for other crops; keeps many people employed; achieves better economic effects in comparison to cultivation of traditionally grown crops; preserves Serbian gene-fond (rare, endemic and threatened medicinal, plant species are preserved and protected from disappearance).

Conclusion

Serbia needs a solid concept of sustainable MAPs collection and cultivation. Therefore, efforts should be directed towards more effective promotion of the entire MAP sector. Sustainability is essential for: biodiversity conservation (the ambient one), security of permanent and safe incomes and decrease of poverty in rural environments (the social one) as well as for providing economic value for society (the economic one). Increase in awareness on importance of biodiversity conservation, achieved throughout continuity of ecological education and trainings for local citizens on picking and cultivating of MAPs along with a better marketing concept for MAP sector, this activity could be expanded on each rural region of Serbia, especially in mountainous regions that are, in that sense, the most jeopardized ones.

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