

Analysis of Sale of Non-Wood Forest Products from Northern Serbia on the Domestic and Foreign Markets

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Abstract

Although it is widely considered that the consumption of non-wood forest products (NWFPs) is the result of food industry innovations, from the historical aspect, the use of these products is most likely the first use of forest resources by human beings. The interest in NWFPs as alternative products in the forest sector has increased drastically throughout the world over the last decade. However, in many countries, the maximal commercial contribution of NWFPs has not yet been achieved. In addition to series of economic, social and environmental benefits to society, special emphasis was put on NWFP importance to local communities which rely on NWFPs as the only source of subsistence. The territory of the Serbian Northern Province is characterised by an exceptional richness in wild flora and fauna. However, it is questionable whether NWFPs as important resources are utilized adequately and commercially and consistent with the sustainable potentials and principles. The aim of this study was to identify the flows of the purchase of raw NWFPs and the sale of final products on the research area in Vojvodina. A hypothetical starting point was that an increase is present in the domestic sale of NWFPs. The purpose of the study was to assess the compatibility of the local and the global markets, with a drastic increase in the marketability of NWFPs as the derivatives of organic production. The subject of the study were the enterprises dealing with NWFPs purchase, processing and sale, purchased quantities of raw products, and the contingents of final products realised on the domestic and foreign markets. The applied methodology was based on the dynamic analysis and statistical methods by which the variations in purchased and sold quantities in the past period are defined and the future trend projects are devised.

Key words: non-wood forest products, enterprises, dynamic analysis, Vojvodina

Introduction

In the last few years, national and international demand of non-wood forest products (NWFPs) has increased and forestry sector has developed a new sense of their importance. The growth of NWFPs industry, assessed from several aspects, was more rapid than that of wood industry (Chamberlain et al. 1998). Although the coverage of this group of products is still a subject of discussion, the widely used FAO working definition indicates that they are “goods of biological origin, other than wood, derived from forests, other wooded lands and trees outside forests” (Ahenkan and Boon 2011). In this study, NWFPs encompass primarily medicinal and aromatic plants, spices, reeds, honey, mushrooms and other forest fruits.

Numerous NWFPs markets are of local significance, so they draw limited attention and investments (Shanley et al. 2002, Sizer et al. 2005). As there are no precise records on NWFPs trade, their social and economic significance is often underestimated (van An-

del 2006). Also, there are no as yet valid qualitative and quantitative national and local data on commercialised quantities of NWFPs worldwide. In addition, statistical data are mainly incomplete, selective and not comparable among countries (Von Hagen et al. 1996, Killmann et al. 2003, Latif et al. 2005, Agustino et al. 2011). In Vojvodina, although the increasing demand for these products is evident, there is still a series of limitations because of which the potentials are largely unutilised. One of the reasons is the fact that the population engagement in the collection and processing of NWFPs is most characteristic of developing and financially straitened territories (Browder 1992, Bishop 1999, Ros-Tonen et al. 2003). The lack of processing capacities greatly reduces the economic effect which could be achieved by a higher level of product finalisation. The low capacity utilisation of the existing NWFP results in inefficient business and poor competitiveness in export trade (Keča et al. 2012a). The processors with a lower production volume do not generate sufficient profits because of weak negotia-

tion opportunities in trade chains, and consequently they cannot invest in the increase in their export competitiveness. The inaccessibility of market and market information was identified by Haugen, with special effect on local communities (Haugen 2011).

A lot of investigations all around the world were dealing with the concept of NWFPs in the different aspects. The most numerous studies are in the field of socio-economic and conservation aspects of the issue (Table 1).

Table 1. Specific studies affecting companies in the field of NWFPs

Study type	Source
Socio – economic studies in NWFPs	Agustino et al., 2011; Arnold and Perez, 1996; Belcher and Schreckenber, 2007; Chamberlain et al., 1998; de Jong et al., 2000; Hyman 1996; Kalinowski 2010; Kilchling et al., 2009; Keča et al., 2012a,b; Keča et al., 2013; Pettenella et al., 2006; Sealand et al., 2007.
Conservation and environmental studies in NWFPs	Arnold and Perez, 1996; Browder 1992; Martinez 2004; Sizer et al., 2005; Shanley et al., 2002; Tieguhong et al., 2009; Von Hagen et al., 1996.
Demographic and poverty reduction studies	Belem et al., 2007; Haggblade et al., 2002; Khnal 2006 ; Marčeta et al., 2012; Richman 2006 ; Ros-Tonen and Wiersum, 2003 ; Vantomme 2004 ; Emery 1998; Subedi 1997.
Valuation of NWFPs studies	Bishop 1999; Godoy et al., 2000; Greene et al., 2000; Haugen 2011 ; Leakey 1999 ; Maso 2008 ; Mater 1993 ; Padoch 1992 ; Peters et al., 1989 ; van Andel 2006 ; De Beer and McDermott, 1989.
Methodological studies on NWFPs	Buchanan and Gibb, 1998; Kaplinsky and Morris, 2002; Meadley, 1989; Mintzberg and Waters, 1982, Rivani 2005; Yin 2009; Ward and Rivani, 2005; Rajesh 2006.
Value chain of NWFPs studies	Adepoju and Salau, 2007; Belcher 1998; Bauch and Sills, 2006; Cohen and Kozak, 2006; Gunnarsson 2007; Jensen 2009; Lamien et al., 1996; Niskanen et al., 2007; van Andel 2006.
Small and medium enterprises studies in NWFPs	Acs and Audretsch, 1990; Birley 1985; Greve 1995; Kaplinsky 2000; Kaplinsky 2004; Low and Mac Millan, 1988; MacQueen 2008; Sexton and Smilor, 1986; Shank and Govindarajan, 1992; te Velde et al., 2006; Weiss and Rametsteiner, 2005; Van Dijk and Rabellotti, 1997.

Therefore, there is a general agreement in the literature on the subject that NWFPs can represent an important component of the forestry sector, sometimes the main component (Janse and Ottisch 2005). Indeed the efficient use of them was to be encouraged at the 1992 Earth Summit in Rio de Janeiro, a sentiment that within Europe was echoed in the subsequent Helsinki and Lisbon resolutions (Keča et. al. 2013). From the literature review, it can be concluded that the most studies are from that period.

Starting from objectively identified comparative advantages of Vojvodina from the aspect of natural resources, the main idea of the study was the monitoring of NWFPs market development through the expression of their quantitative variations. It is difficult to evaluate the NWFPs contribution to the livelihood of the rural population, because of the lack of precise data on the scope of production and trade, as well as on the number of employees involved in NWFPs commercialisation (Vantomme 2004). The relevance of this statement is reflected in the fact that

Vojvodina is predominantly a rural area. NWFPs have both economic and social values that exceed even the value of wood products in some fields (Peters et al. 1989, Padoch et al. 1992, Greene et al. 2000).

The starting point is that the trends of most of the products at the national market are positive. The aim of this study is to identify the flows of the purchase and sale of NWFPs in the area of Vojvodina. The subject of the study is the enterprises dealing with NWFP purchase, processing and sale, and elements of relised products. To determine some regularities in the flow of the observed phenomena, we analyse a seven-year period 2006-2012 aiming for a more precise design of future trends.

Materials and Methods

Study area

The research was carried out in the Serbian Northern Province Vojvodina (Figure 1). We have interviewed 28 enterprises engaged in NWFPs purchase, processing and sale, in total 34 registered companies in the territory according to unofficial data. Among interviewed companies, 5 of them are engaged in purchasing, processing and sale of medicinal plants, 10 – in honey production, 3 – in mushroom purchase and production, 1 – in purchase of snails, 1 – in purchase and processing of honey and rose hips, and 2 – in purchase and processing of reeds. This choice for study was based on their expected significance in the overall value of trade on NWFPs in Vojvodina. Production structure of those groups of 28 enterprises was the same as of the whole group of 34. In total 34 were not ready to answer the questions and that was the limiting factor in this instance.

Vojvodina is characterized by favourable edaphic conditions, good quality soils suitable for farming,



Figure 1. Locations of interviewed enterprises in Vojvodina Province

ecologically pure space with good predispositions for the development of organic production (Marčeta et al. 2012). In this sense, NWFPs, as products of natural origin, are increasingly significant in the segment of organic production in this area. The total area of Vojvodina is 21,506 km². Arable land comprises 70%, and the high-quality soil together with favourable climate conditions makes the area of Vojvodina extremely suitable for the production of healthy and safe food.

Methods

Both general and special research methods were applied in accordance with the addressed issues and the target goals. The special scientific methods were used to analyse the time series through the trend and index numbers. The directed interview was selected as the basic research method. This form of interview is suitable because it insists on complete, precise and good-quality responses. We have used open and closed questioning (Janse and Ottitsch 2005). Its main advantages are the direct communication with the study subject, systematics, economics and preciseness (Mihajlović 2004, Miljević 2007). Face to face interviews were conducted (particularly when dealing with the leading companies in the field), and in other cases questionnaires were sent by post (Appendix 1). General advantage of the interview is the fact that the interviewer can reformulate the question if the interviewee does not understand (Havelka et al. 1998). The response rate was 82.3 % gained on several occasions of interviewing and presentation of the most important elements of this study that may improve their business. Bearing in mind the aim of the study, the questions refer to types and quantities of purchased NWFPs in raw state, i.e. different types of medicinal herbs, snails, reed bundle, oyster mushroom, as well as to the quantities which are sold as the final products (i.e. different types of teas, honey and honey products, marmalades, reed products, spices, dry extracts) both on the national and on the international markets. In the questionnaire, one closed type question was related to the problems and conditions in which enterprises conduct their business. Therefore, entrepreneurs offered several alternative answers, of which they performed a choice according to their own experiences and opinions. In addition to this, in the questionnaire were also issues related to the kind of adopted standards and perceived effects caused by their adoption, as well as use of any kind of state support.

After the acquisition, the data are divided into those related to the purchase of raw materials, the sale of final NWFPs on the domestic market, and to NWFPs export. The trend was selected based on the calculated least standard error (Formula 1).

$$sY = \sqrt{\frac{\sum(Y-Y)^2}{n}} \quad (1)$$

where sY – standard error, $\sum(Y-Y)^2$ – difference of squares of empirical and theoretical value, n – number of years.

All three groups of data were processed in the same way using the standard *Microsoft Office* package to identify the trends, and provide the future actions, both regarding the purchase of raw NWFPs, and the sale of final products on the domestic and foreign markets. The calculated regression models were verified based on the correlation coefficients (R) and F test (Stojković 2001), which defined the significance of correlation coefficients. The test level of significance was $\alpha=0.05$.

Average changes in the purchase and sale were calculated based on the already formed data series and on chain indices. At the start, absolute changes in the purchase of raw products and the sale of final NWFPs were computed based on chain indices using the formulas (2 and 3).

$$\bar{y}_a = \frac{\sum Y}{n} \quad (2), \quad \bar{y}_b = \frac{\sum(Y-Y_{-1})}{n-1} \quad (3)$$

where \bar{y}_a mean absolute occurrence level, $\sum Y$ – total occurrence value, n – number of years, \bar{y}_b mean absolute growth, $\sum(Y-Y_{-1})$ – total absolute growth. Chain indices were aimed at the analysis of variations in NWFPs purchase and sale, compared to the previous year in the study interval. This made it possible to observe more details of the development tendencies of NWFPs sale.

Additionally, the trends of NWFPs purchase and sale were calculated using the formulas (4, 5, 6 and 7) with relative indicators.

$$\bar{y}_c = \frac{Y}{Y_{-1}} * 100 \quad (4) \Rightarrow \bar{y}_d = \bar{y}_c - 100 \quad (5) \Rightarrow G = \text{anti} \log \frac{\sum \log \bar{y}_c}{n-1} \quad (6) \Rightarrow \bar{y}_e = G - 100 \quad (7)$$

where \bar{y}_c – rate of development, Y – value of current-year occurrence, Y_{-1} value of previous-year occurrence, \bar{y}_d – rate of growth, \bar{y}_c – rate of development, G – geometric mean, $\sum \log \bar{y}_c$ – sum of the logarithms of the rate of development, n – number of years, \bar{y}_e – mean rate of growth.

The study was focused mainly on micro and small enterprises, primarily dealing with honey and medicinal plant products, which are at the same time the dominant entrepreneurial orientations in Vojvodina.

Results

In the area of Vojvodina, among the products classified as “non-wood forest products”, such as mushrooms, reed products, snails and etc., the dominant production is that of honey and secondary products based on honey, but also the purchase, processing and sale of products based on medicinal plants. Table 2 shows the volume of purchased quantities of raw materials for 28 interviewed enterprises in the period

Purchase of NWFP raw materials

According to the quadratic trend model, it was estimated that in 2014, the purchase of raw NWFPs will comprise 512.2 t, and 67,100 pieces (Figures 2 and 3). The parameters in both Figures are characterised by the strong correlation and the significance at the level $\alpha=0.05$.

The analysis shows that the highest average annual growth was in purchase of bearberry (33.9%), and the lowest of the mixture of medicinal plants (4.9%)

Table 2. Purchase of NWFPs in raw state in the period 2006-2012

PRODUCT	Measure unit	2006	2007	2008	2009	2010	2011	2012
Chamomile	t	27.9	27.2	31.5	32.1	31.2	30	44
Mint	t	26.6	33.7	31.3	38.9	52.5	58	74
Wild apple	t	5	7.4	9.9	11.7	18.7	22	27
Bearberry leaf	t	2	2.7	4	5.3	7.8	9	11.5
Dog rose	t	45	58.3	70.9	64.6	50.4	40	48
Elder	t	2	5	4	7	6.5	7.5	9.6
Plantain	t	1	2	1	4	3	5	3
Nettle	t	5	7	10	10	8	9	9
Marshmallow root	t	5	8	4	12	7	9	10
Comfrey	t	10	12	8	4	20	10	14
Medical herbs	t	150	160	180	185	185	160	200
Echinacea	t	2	3	5	5	6	0	0
Frangula	t	0.8	1	0.5	1.2	2	0	0
Horse chestnut	t	0	0	0	5	10	0	0
St.John's wort	t	0.5	0.5	0.8	1	1	0	0
Honey	t	20	25	25	0	0	0	0
Vineyard snail	t	0	0	30	35	40	40	40
Garden snail	t	0	0	10	10	10	10	10
Forest snail	t	0	0	10	20	30	20	20
Σ		303.2	353.2	436.3	452.2	489.5	448.9	541.2
Oyster mushroom	piece	0	0	0	0	0	0	250
Reed bundle	piece	23,000	23,000	33,000	33,000	43,000	43,000	53,000
Σ		23,000	23,000	33,000	33,300	43,400	43,450	53,750

2006-2012. The changes that can be observed based on the available data, point to a positive trend in the purchase of a large number of products; however, the products without a positive trend showed constant quantities and balanced purchasing in the interval.

Table 3 presents the sold quantities of final NWFPs on the domestic market, which is characterised by fluctuations of various intensities depending on the product type. Also, some products have shown a balanced sale during the entire period, or during a part of the study interval.

Table 4 presents the export of final NWFPs in the period 2006-2012. There are cases of export interruption; however, it is evident that the export of some products was started only in the most recent years of the study period.

and rose hip fruits (1%) (Figure 4). During the period 2006-2012, the average annual purchase of NWFP raw materials amounted to 431.9 t, and average annual growth was 39.6 t.

The average annual growth of reed bundle purchase accounted for 14.9% (Figure 5), i.e. 5,000 pieces.

Sale of final NWFPs on the domestic market

The sale of final products on the domestic market is characterised by three different dynamics. The products sold by (t) had positive trends throughout the period 2006-2012 (Figure 6). Conversely, the sale of products sold by piece had a degressive trend over a greater part of the study interval (Figure 7), except during 2007 and 2009, when there was a mild growth. The products measured by (m²) showed the subperi-

PRODUCT	Measure unit	2006	2007	2008	2009	2010	2011	2012
Chamomile tea	t	155.2	188	218	271.1	318.9	372.2	465
Mint tea	t	240.4	296	361.2	409.7	509.1	600.6	749.8
Green tea	t	180.2	237.3	279.2	320.1	386.3	454.6	568.2
Cranberry tea	t	65	75.8	90.3	114.3	136	170	210.3
Wild cherry tea	t	62.3	76.6	95.8	115.4	135.7	159.7	209.6
Marshmallow cube	t	8	7	4	2	6	4	3
Marshmallow leaf	t	0.5	1	0.3	0.3	1	1.5	0.5
Elder	t	1	1	1	1	1	1	1
Plantain	t	1	2	2	1	1	1	2
Nettle	t	2	3	3	2	2	3	2
Filter tea	t	0	0	0	10	29	30	33
Medical herbs	t	340	360	350	290	190	220	200
Spices	t	23	23	25	20	10	20	15
Dry extracts	t	0.6	0.8	1.5	2	3	3	3.5
Honey	t	18.6	17.7	21.5	24.1	27.5	21	20.4
Propolis	t	0.03	0.03	0.03	0.03	0.03	0.03	0.04
Pollen	t	0.2	0.2	0.2	0.2	0.2	0.1	0.1
Wax	t	0.04	0.04	0.04	0.04	0.04	0.04	0.04
Σ		1,207.8	1,397.2	1,562.9	1,695.2	1,866.6	2,173.8	2,595.5
Dog rose marmalade (jar) 690g	piece	120,000	130,000	100,000	110,000	60,000	0	0
Dog rose marmalade 850g PVC	piece	45,000	50,000	30,000	35,000	17,000	0	0
Dog rose marmalade 3 kg PVC	piece	600	700	500	550	200	0	0
Dog rose spread 580g	piece	60,000	70,000	40,000	50,000	25,000	0	0
Flower honey 690g	piece	30,000	40,000	20,000	26,000	15,000	0	0
Oyster mushroom	piece	0	0	0	0	0	0	270
Reed umbrella	piece	600	200	50	100	200	600	600
Σ		256,200	290,900	190,550	221,770	117,572	800	1,097
Reed plate	m ²	10,000	10,000	12,000	12,000	12,000	10,000	10,000
Reed knit	m ²	60,000	60,000	30,000	30,000	60,000	70,000	60,000
Plastering	m ²	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Densely reed knit	m ²	200	200	200	200	200	200	200
Pressed reed 3 cm	m ²	400	400	400	400	400	400	400
Pressed reed 5 cm	m ²	300	300	300	300	300	300	300
Pressed reed 10 cm	m ²	300	300	300	300	300	300	300
Σ		72,200	72,200	44,200	44,200	74,200	82,200	72,200

Table 3. Sale of final NWFPs in the period 2006-2012

ods of sale stagnation and growth on the domestic market (Figure 8).

It is estimated that, according to the quadratic trend in 2014, the sale of final NWFPs (t) on the domestic market will amount to 3,347.4 t (Figure 6). The sale of products sold by piece (marmalade, rose hip jam) stopped in 2010 (Figure 7). Based on the same trend, it is estimated that the sale of reed products (m²) on the domestic market will be 122,342.9 m² (Figure 8).

The parameters have strong correlation and significance level $\alpha=0.05$ (Figures 6 and 7). The correlation of parameters in Figure 8 is modest and it is not significant at the level $\alpha=0.05$. For that reason, the results should be used with caution.

The greatest decrease in sale of 15.1% was recorded in the dried marshmallow root, and the most significant growth of 48.9% was achieved in the sale of tea bags (Figure 9). Average annual sale of final NWFPs

Table 4. Export of final NWFPs in the period 2006-2012

PRODUCT	Measure unit	2006	2007	2008	2009	2010	2011	2012
Filter tea	t	0	0	0	0	0	1	4
Medical herbs	t	310	300	290	240	180	190	180
Spices	t	19	20	16	17	9	17	15
Honey	t	0	0	0	0	0	7	5,5
Vineyard snail	t	0	0	30	35	40	0	0
Garden snail	t	0	0	10	10	10	0	0
Forest snail	t	0	0	20	20	20	0	0
Σ		329	320	366	322	259	215	204,5
Pressed reed 3 cm	m ²	0	0	0	300	300	0	0
Pressed reed 5 cm	m ²	0	0	0	400	400	0	0
Pressed reed 10 cm	m ²	0	0	0	300	300	0	0
Reed plate	m ²	30.000	20.000	20.000	15.000	15.000	30.000	30.000
Reed knit	m ²	80.000	60.000	80.000	80.000	70.000	80.000	70.000
Σ		110.000	80.000	100.000	96.000	86.000	110.000	100.000
Reed umbrella	piece	800	200	100	100	200	600	700
Σ		800	200	100	100	200	600	700

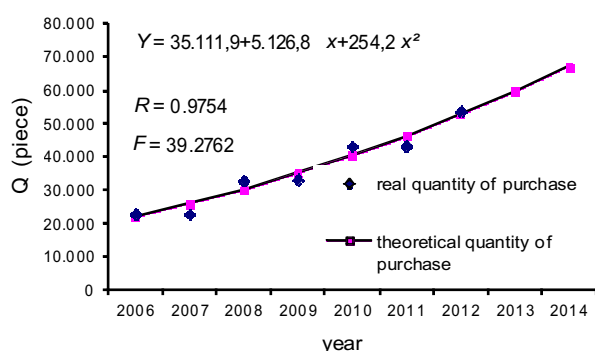
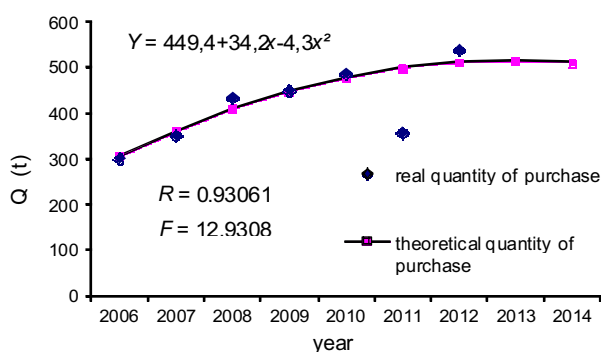


Figure 2 and 3. Trend of purchase of NWFP raw materials expressed in tons and pieces over 2006-2012

on the domestic market amounted to 1,785.6 t, and average annual growth was 231.3 t.

The sale of honey and rosehip products has decreased. Pleurotus purchase and sale started only in 2012. The average annual sale of products sold by unit (except for reeds as is shown in Figure 10) on the domestic market was 154,127 pcs and the average annual drop was 42,518 pieces. The mean absolute level, or the average annual volume of reed product sale

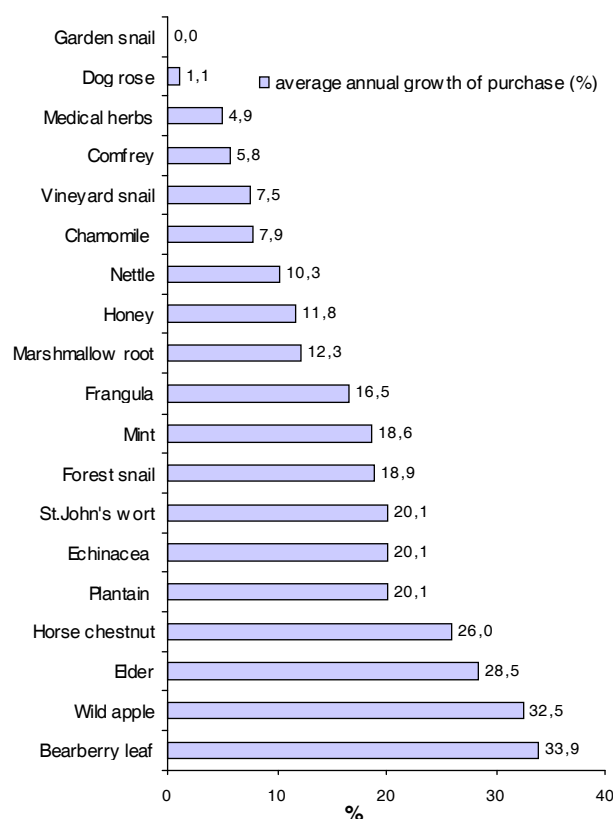


Figure 4. Mean growth rate in purchase of NWFP raw materials (t) in 2006-2012

(m²) was 65,914.3 m², and the mean absolute growth was 0 (Figure 10).

The price is variable depending on the balance of supply and demand over the year, for example mushrooms may only command 2-3 Euros per kg in early autumn, but fetch as much as 5-10 at the end of the

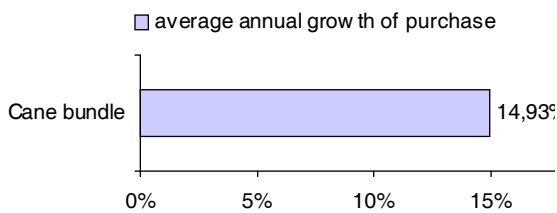
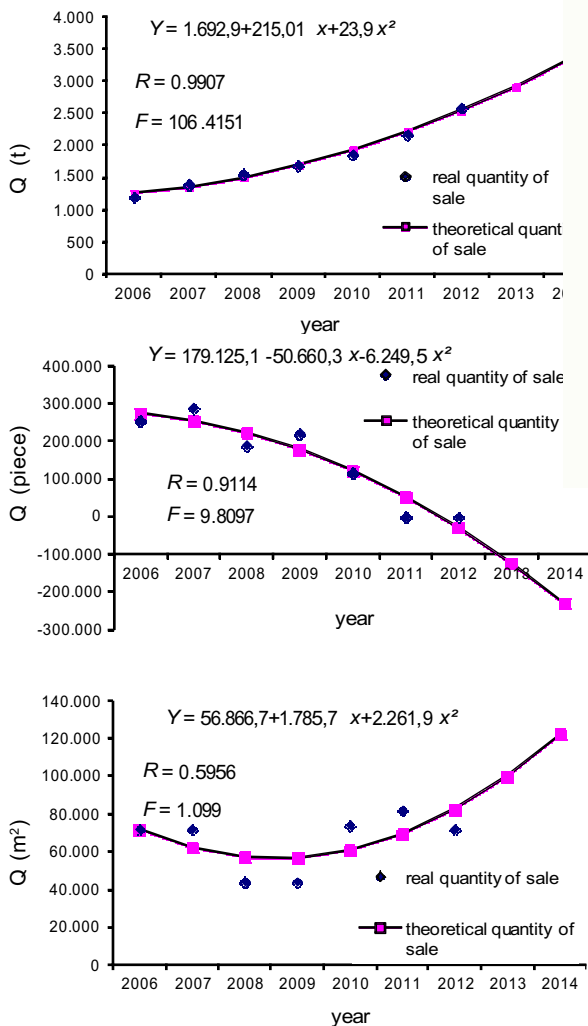


Figure 5. Mean growth rate in purchase of NWF materials (pieces) in the period 2006-2012



Figures 6, 7 and 8. Sale of final NWFs on the domestic market sold by (t, unit and m²), 2006-2012

season. In addition, the productivity in any one year is a factor, whereas in 2007, the average price of boletus was only 2 Euros per kg with the export price being 6 Euros. However, in 2008 the equivalent figures were 5 and 10 Euros, respectively, as small quantities supplied in markets were caused by drought in the summer months (Keča et al. 2013). Almost all enterprises indicated that the price, at which they sold, was

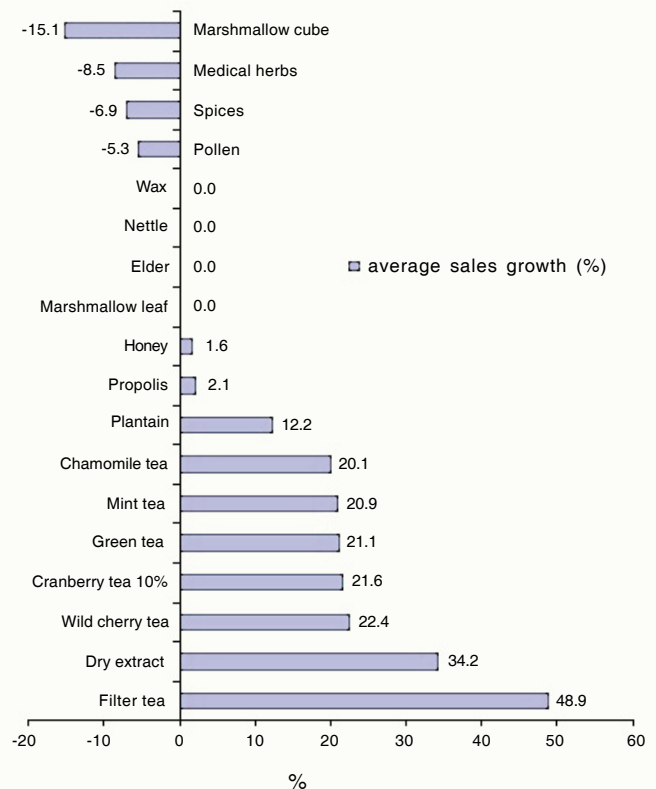


Figure 9. Mean rate of growth of final NWFs sale (t) on the domestic market in 2006-2012

decided on a “cost plus” basis. Cost price includes the purchase price and costs of processing, packaging, transport and promotion.

Export of the final products

Among 28 interviewed enterprises, 5 are export-oriented. Two enterprises deal with medicinal and aromatic plants, one enterprise deals with honey production and sale, and two enterprises deal with reed products.

The most significant markets for the sale of medicinal and aromatic plants were Germany and Austria, where 910 t and 840 t, respectively, were exported in the period 2006-2012 (Figure 11). During the same interval, 199.1 t was exported to Croatia, and 21 t was exported to Bosnia and Herzegovina. Export of medicinal plants in the form of dry extracts initiated in 2010, when 0.1 t was exported to Italy. It was only in 2012, that one enterprise oriented to purchase, processing and sale of medicinal and aromatic plants started the export to Italian market. One enterprise within this domain exported to Germany and Austria throughout the study period between 2006 and 2012.

Live snails were exported by one enterprise. From 2008, the entire quantity of unprocessed snails was sold

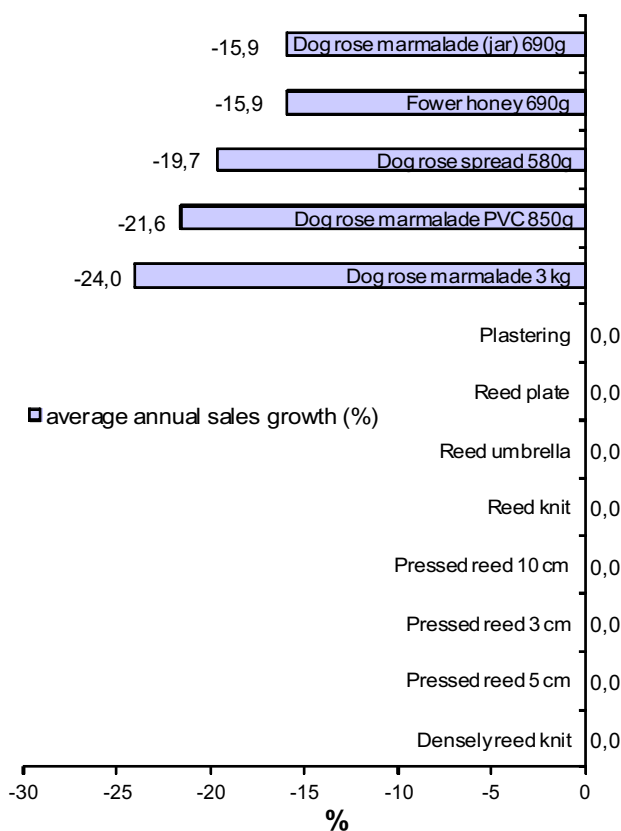


Figure 10. Mean rate of growth of the final NWFPs sale (unit, m²) in 2006-2012

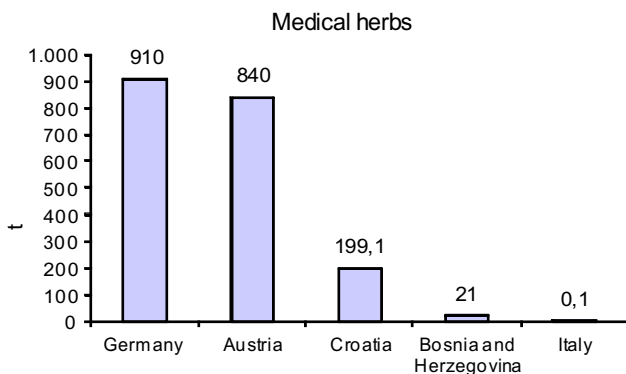


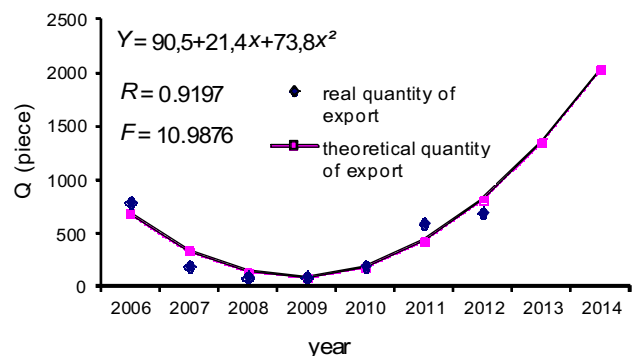
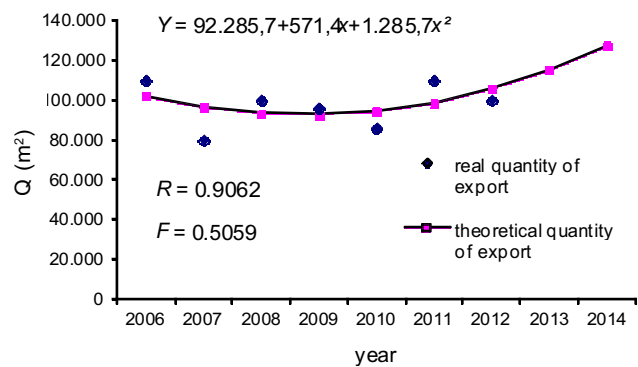
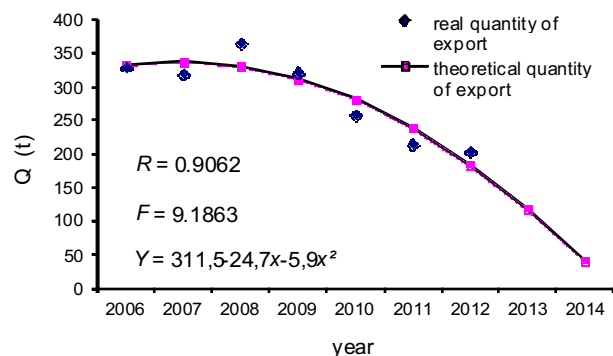
Figure 11. Export markets of medicinal and aromatic plants in 2006-2012

to Bosnia and Herzegovina. From 2006 to 2010, the total sale of live snails was 335 t. In the period 2006-2012, the sale of reed products (i.e. reed boards, pressed reed and stukatur or woven reed) to the markers in Germany, Italy and Montenegro was identical, 204,000 m². The total export to France was 68,000 m² and to Croatia 2,000 m². Reed parasols achieved the most significant sale to Montenegro market (1,890 pcs), 540 pcs were exported to Germany, and 270 pcs to Italy.

Trend of the final export of NWFPs in 2006-2012

The export of the final products is characterised by fluctuations in the trend line, especially in the sale of products sold per m², whereas the fluctuations in products exported per ton are somewhat slighter. The sale of products sold by piece on the foreign markets until 2007 was characterised by stagnation, followed by a period of growth until 2012.

Export of the final NWFPs (t) had a downward trend during the period 2006-2012 (Figure 12), and slight growth in the export of products expressed in m² and by piece (Figures 13 and 14). In accordance with the quadratic trend model, we found that export of the final NWFPs (t) in 2014 will amount to 210.6 t, 127,285.7 m² and 2,043 pcs. There was the strong correlation among parameters at a significance level $\alpha=0.05$ (Figures 12



Figures 12, 13 and 14. Export of the final NWFPs expressed in t, m² and by piece in 2006-2012

and 14). However, products exported per m² are not significant at the level $\alpha=0.05$ (Figure 13).

The average annual export of products per (t) (teas, spices, honey and snails) amounted to 307.9 t; however, during the interval 2006-2012, the average annual drop in the export reached 9.1 t (Figure 15).

The average annual export of products exported per m² (pressed reed, reed boards and stukatur or one-row-woven reed) was 97,428.6 m², and the average annual drop in export was 1,666.7 m².

The average annual export of reed parasols, as the only product sold by piece on foreign market, was 386 pcs, and the average annual drop was 17 pcs.

From the standpoint of the conditions in which the enterprises carry on business, an aggravating circumstance is unfair competition as highlighted by 25% of enterprises (Figure 16).

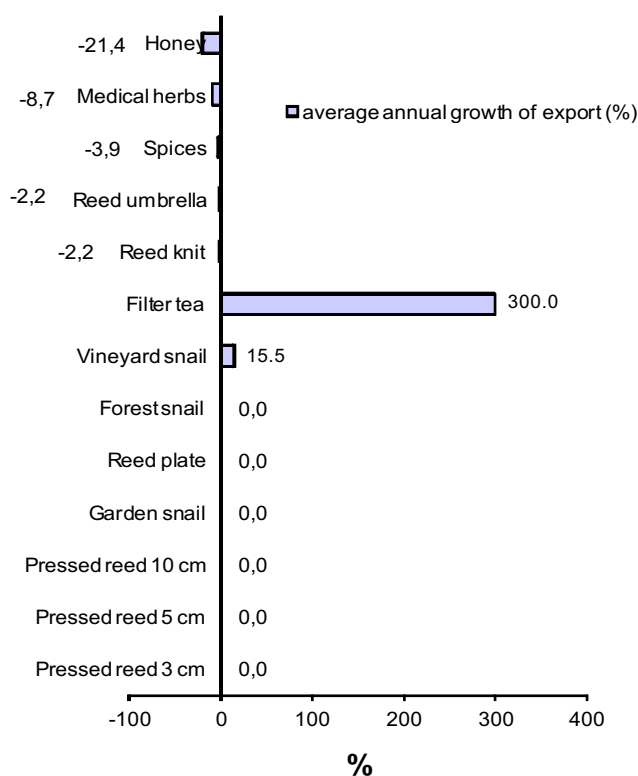


Figure 15. Mean rate of growth of the final NWFP export (t, pcs, m²) in 2006-2012

Difficult terrain conditions are a critical factor identified by 22% of enterprises mainly those dealing with honey production by mobile beekeeping, which requires the relocation of bee colonies searching for the pasture quality. Non-specialised workforce is a problem for 15% of enterprises, and 12% are not satisfied with the design of their products and with the entire marketing. Product properties, e.g. high degree

TERMS OF BUSINESS

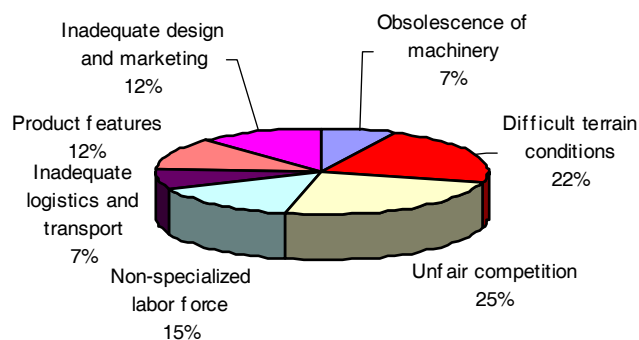


Figure 16. Conditions in which the enterprises carry on business

of perishability and the need for efficient and expert manipulation of both raw products and final products, were identified as a “sensitive” business segment by 12% of enterprises. Obsolete equipment and machinery and unsatisfactory logistic and transport potentials was identified by 7% of enterprises. Borrowing from the banking sector for this purpose is estimated as rather unfavourable and altogether three interviewed enterprises used short-term loans for investment and business development, and government subsidies and incentives were not represented by any of the enterprises during the period 2006-2012.

Discussion

From marketing standpoint, NWFPs are one of the most challenging groups of products because of their number, versatility, variety of uses, and a great potential for application in industry (Lintu 1995, Leakey 1999). This research shows a progressive trend in the purchase of raw products and in the sale of final products on the domestic market and of some types of products on foreign market. These points to an analogy with the global market, where the demand for the products of natural origin is increasingly greater under the influence of expanded organic production. Nowadays, more than 150 types of NWFPs are significant as commodities in international trade (Hinsui et al. 2008), such as traditional (Khanal 2006) boletus, chanterelles, oyster mushrooms, wild blackberries, raspberries, forest strawberries, etc. However, because of favourable natural conditions, honey and medicinal plants are the most developed commodities in Vojvodina.

According to Haggblade, goods, which are sold outside the region, have substantial chances to increase the market and are a powerful initiator of economic growth (Haggblade et al. 2002). In this point, it can be concluded that NWFPs sector in Vojvodina is

deprived of this kind of economic expansion, primarily because of the dominance of small capacities and financially limited enterprises. NWFP production and commercialisation is mainly carried on in rural areas (Maso 2008), which makes Vojvodina a very favourable territory for the development of the sector based on NWFP trade.

Numerous authors emphasise the value and significance of NWFPs (Neumann and Hirsch 2000, Ros-Tonen and Wiersum 2005), but according to Godoy, their value is somewhat lower (Godoy et al. 2000). If the "value of NWFPs" is equalised with their market value, the decisive factor is the degree of product finalisation. The dominant products supplied by interviewed enterprises are mainly primary products, although there are also some products of higher processing levels.

NWFPs market potentials depend on whether the demand is changed in accordance with the changes in revenue, market characteristics (local, urban, industrial, export), and market development stages (Arnold and Pérez 1998). This model is compatible with the situation in Vojvodina, where consumption is largely determined by purchasing power, and NWFPs market potential is mainly reduced by predominantly local and insufficiently developed market. As long as the producers have access to markets, their most important challenge is to increase the quality and quantity of production at competitive prices (Belcher and Schreckenberg 2007).

NWFPs of a successful transition include medicinal plants, forest fruits and spices (Mater 1993, Richman 2007). The results of our study confirm this showing increased sales on the domestic market in the domain of medicinal plants. The exception is a mixture of medicinal plants, which realization has slightly decreased. Although according to Yavuz (Yavuz et al. 1999), NWFPs such as mushrooms and chestnut are important instruments for local development in some Balkan countries outside EU, in Vojvodina, the focus is placed on honey and medicinal plant products because of good natural predispositions. The examined enterprises base their business primarily on the purchase and processing of medicinal plants and reeds, the purchase and sale of snails, the production of honey and mushrooms as well as their most significant final products both on domestic and foreign markets. It is assumed that although these companies are small with low overhead costs, they are the most efficient in forestry (Nicholson et al. 2006). As the interviewed enterprises are mainly small, this fact indicates that there are preconditions for achieving the business efficiency.

As a consequence of economic crisis, the pressure on many NWFPs is rising, which could lead to

excessive exploitation in the wild (Tieguhong et al. 2009). However, in Serbia, the species of wild flora, fauna and mushrooms are strictly identified; therefore, their collection is definitely controlled by the rulebook on purchase. In addition, entrepreneurs must have licenses for the collection of raw materials issued by the relevant institutions, both in the cases of collection and purchase of raw materials (Keča and Plavšić 2012). Potential solution of the problem of excessive NWFP exploitation is their cultivation (Arnold and Ruiz Pérez 2001, De Jong et al. 2000, Belem et al. 2007).

Based on the above research, companies of NWFP processing and marketing in Vojvodina try to supply their products to a wider market and, for that reason, they choose their intermediaries (wholesale or retail), which contribute to the realisation of this goal through their distribution network. Conversely, because of limited resources and a small amount of products, the smaller individual producers (primarily honey producers) supply a narrower segment of the market and opt for direct sales to end users. The interviewed enterprises typically sell their products through intermediaries. According to Arnold and Pérez, brokers play a key role in the trade of products that are characterized by perishability, seasonal supply or demand, fragmented production and difficult transport (Arnold and Pérez 1996).

The analysis of NWFP sale on the domestic and export markets shows that there is a significant synchronicity from the aspect of the dynamics of realisation on both markets. Namely, reed products are characterised by uniform sales both on the domestic and on the international markets, bulk medicinal plants and spices show degressive trends on both markets, while tea bags have positive trends both on domestic and foreign markets.

According to Pettenella (Pettenella et al. 2006), in Vojvodina, dominant categories are small and medium enterprises with limited financial and labour resources. Their activity is restricted to forestry sector and they are specialised in a small number of activities. Therefore, by a fragmented production of nonstandardised quality and by unstable quantities of raw and final NWFPs, in the past Vojvodina could not be significantly involved in international markets (Keča et al. 2012b). Positive changes in their operations were the implementation of HACCP and ISO 9001, by which they were eligible for entry into the European market. The main barrier to entry into export markets is the supply (Belcher and Schreckenberg 2007), which is also confirmed by this study. Because of the limited production capabilities in Vojvodina, small enterprises fail to respond adequately to the growing demands of international markets. Individual producers control

only minor quantities of products. Their negotiating power is poor and their information on prices, conditions and locations of alternative markets is insufficient (Hyman 1996, Martinez 2004).

For foreign market entry, the NWFP enterprise must fulfil a number of import-export conditions, above all the respect of quality standards, phytosanitary regulations, license and tax payments, storage and transport, often involving multiple agents and distributors (Vantomme 2004). These factors create barriers to small producers, who are predominantly addressed in this study, to perform and develop their products outside the country. The lack of local markets, processing facilities as well as communications and transport services, prevent the commercialization of some NWFPs (Richman 2006), most often readily perishable.

In general, the obstacles to entrepreneurship are that NWFPs have low market relevance in relation to wood, and that they are seasonal products, which creates a problem of consistency in the market supply (Seeland et al. 2007). However, it was found that the products of interviewed enterprises were mainly not included in the class of readily perishable products (honey, medicinal plants and reed products), by which the issue of constant market supply was excluded. Enterprises encountered with different problems, and the primary ones are unfair competition and difficult terrain conditions. Similar limiting factors in NWFPs trade are recognised by Latif and Shinwari and, in addition to the above, the fluctuations in supplies and the aggravated market accessibility (Latif and Shinwari 2005, Kilchling et al. 2009). This points to the aggravated position of micro and small enterprises both globally and in the area of Vojvodina which makes NWFPs realisation much lower than it is objectively possible due to the lack of processing capacity, education related to production, quantitative heterogeneity of products and unstable supply.

Conclusions

NWFPs purchase (in tons and pieces) in their raw state had an increasing trend from 2006 to 2012, with the project of a positive trend in future. The sale of final NWFPs (t) on the domestic market shows a continuous growth from 2006 to 2012. It was estimated that the positive trend will be continued in 2014. The sale of products sold by piece recorded the regressive trend on domestic market, and stopped in 2010. The sale of products sold by piece recorded the regressive trend on domestic market and stopped in 2010, while products sold by m² (reed products) had a sub-periods of growth and decline with positive projections in 2014.

Among 28 interviewed enterprises, altogether 5 are export oriented. The most significant markets for the export of medicinal and aromatic plants are Germany, Austria and Italy. Honey is exported to Germany, and reed products to Germany, Italy, France, Montenegro and Croatia. Live snails are exported to Bosnia and Herzegovina. Between 2006 and 2012, export of the final NWFPs (t) had a decreasing trend with the projection of the negative trend in future. However, there was recorded a slight growth in the export of products expressed in m² and by piece with positive projections in 2014.

The greatest problems identified by the enterprises in their business are unfair competition and difficult terrain conditions, as well as non-specialised workforce.

Most of the final NWFPs achieved the growth of sales on the domestic market, which is the confirmation of the initial hypothesis. Altogether six types of final NWFPs had an unchanged volume of export, the export of five products decreased, and export volume of two products increased. The majority of final NWFPs did not succeed in raising their export volume, by which the initial hypothesis was disproved.

The expansion of organic production and the consumption at the global level, together with favourable natural predispositions available in Vojvodina, create great opportunities for the development of NWFPs sector in national economy. By stimulating measures in the form of stimulation of export activities and favourable credits, the state could raise the NWFPs production and sale to a higher level, which would have a direct positive impact on the growth of employment, and indirect impact on poverty reduction in underdeveloped areas.

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Appendix 1. Questionnaire on commercialization of non-wood forest products for processing companies

PART I – Explanation of the survey participants about the purpose of the survey.

Dear Madam/Sir,

Survey aims to collect information on companies involved in processing non-wood forest products (NWFPs) in the Republic of Serbia. You fill out a survey due to collection of data relevant to testing the market of NWFPs in Serbia. All data will be exclusively used for scientific purposes. Your discretion is guaranteed in terms of data that provide us. Hence, the name of your company, and information you provide us will not be mentioned in our work and future research, but you will be cited as company A, B, C, etc.. The data will be used solely for scientific analysis. Private data will not be distributed, nor will it be cited names and company names of respondents.

The questionnaire is an integral part of the research of NWFPs in Serbia i.e. Value chain of NWFPs and its importance for forestry sector in Rep. of Serbia. The aim of the project is to identify whether and how actors (entrepreneurs) in Serbia understand/perceive/communicate/implement and conduct business in field of NWFPs. Concept of NWFPs is adapted by the national forest sectors as policy systems. However, your participation in this research is voluntary. Your answers will be used only for scientific purposes by assuring the respondents anonymity.

PART II – General description of the surveyed companies

1. Company name and the name of the person who filled out a survey: _____
2. Address and phone number: _____
3. Web address: _____
4. Ownership (please circle): private social state mixed
5. Industry *activity code of your company: _____
6. The main products of the company (according to the physical volume of production) are:

PART III – Questions for survey participants

7. The quantities of products in a raw state you purchase annually for the period 2006-2012:

№	Product	Quantity						
		Unit						
		2006.	2007.	2008.	2009.	2010.	2011.	2012.
1.								
2.								
3.								
4.								
5.								

8. Final products you sell on the **domestic** market:

№	Product	Placement	Quantity						
			Unit						
			2006.	2007.	2008.	2009.	2010.	2011.	2012.
1.									
2.									
3.									
4.									
5.									

9. Final products that sell in **foreign** markets:

№	Product	Quantity					
		2006.	2007.	2008.	2009.	2010.	2011.
1.							
2.							
3.							
4.							
5.							

10. In which countries are exporting finished products?

Product	country	country	country	country	country
	quantity	quantity	quantity	quantity	quantity

11. Do you accept any of the applicable standards relating to the NWFPs?

- yes _____
- no _____

12. If so, what are the standards? (you can circle more than one answer)

- Kosher
- HACCP
- Healthy food
- ISO 9001
- “Organic food” standards
- Else _____

13. Whether, in this sense (the period of adoption and application of standards) have noticed an improvement in operations, product quality, etc..?

- yes _____
- no _____

14. The conditions of the production process takes place or perform the services (you can circle more than one answer)

- Old machinery
- Difficult field conditions
- Unfair competition
- Non-specialized workforce
- Inadequate logistics and transport
- Product features
- Inadequate design and marketing
- Else: _____

15. State support (grants / loans): (If you have answered yes, please specify the type of support):

- yes: _____
- no _____

*Thank you for your cooperation and your time!
If you have any questions please don't hesitate to contact us on the address below!*

АНАЛИЗ СБЫТА НЕДРЕВЕСНОЙ ПРОДУКЦИИ ЛЕСА (НДПЛ) ИЗ СЕВЕРНОЙ СЕРБИИ НА ОТЕЧЕСТВЕННЫЙ И ЗАРУБЕЖНЫЙ РЫНОК**М. Marčeta и Л. Кеча***Резюме*

Данное исследование проведено с целью анализа закупки сырой и сбыта готовой недревесной продукции леса (НДПЛ) в рамках исследуемого образца в области автономного края Воеводина. Мы исходили из гипотетического предположения, что увеличение объема продажи на отечественном рынке сопровождается и увеличением вывоза данной продукции. Исследование направлено на определение компатибельности отечественного и мирового рынка, на котором резко увеличивается спрос на НДПЛ, являющуюся органической продукцией. Предметом исследования послужили предприятия, занимающиеся закупкой, переработкой и сбытом НДПЛ, закупленное количество сырой продукции, а также и контингенты готовой продукции на отечественном и зарубежном рынке. Методология, использованная в исследовании, основывается на динамическом анализе и статистических методах, с помощью которых определялось количество продукции, закупленной и проданной в предыдущем периоде. Также проведены исследования тенденций сбыта на рынке в будущем.

Уже несколько лет на отечественном и зарубежном рынке увеличивается спрос на НДПЛ, и в лесоводческом секторе она становится все важнее. Данное исследование показало, что на рынке увеличивается спрос на НДПЛ в качестве сырья. Подобное увеличение закупки НДПЛ ожидается и в будущем. Динамика сбыта готовой НДПЛ на отечественном рынке неустойчивая, в зависимости от вида продуктов. Так в сбыте отдельных продуктов наблюдается деградация, в сбыте продуктов, показанных в *mI* заметна стагнация, а потом и увеличение объема продажи. Сбыт продукции в *t* в течение всего интервала постоянно увеличивается. В вывозе данной продукции также наблюдаются три различных тенденции, но по сравнению со сбытом на отечественном рынке, заметно понижение сбыта продукции, показанной в *t*, сбыт продукции из *mI* увеличивается, в то время как сбыт отдельных продуктов сначала стагнирует, а потом увеличивается. Основная проблема отечественных предприятий, занимающихся НДПЛ – это ограничение возможностей переработки продукции и малочисленные готовые продукты. Кроме того, их оборудование и механизация устаревшие, а локальный рынок еще недостаточно развит. Но, предприятия, занимающиеся закупкой, переработкой и продажей НДПЛ на территории Воеводины все-таки обеспечивают конкурентоспособность на отечественном и зарубежном рынке, благодаря богатству и доступности растительных видов, довольно низким ценам закупки сырья и недорогой рабочей силе. Однако, отечественные предприятия сталкиваются с многочисленными препятствиями для вывоза. В первую очередь, это сложные и дорогие административные процедуры, а также нестандартное производство и продукция. На территории Воеводины сектор НДПЛ в будущем может развиваться при условии организации 16 предпринимателей по горизонтальной или вертикальной модели, при постоянной поддержке государства и банковского сектора, ибо аграрные кредиты могут обеспечить необходимую финансовую основу для улучшения перерабатывающих мощностей предприятий и других видов инвестирования в развитие бизнеса.

Ключевые слова: недревесные лесные продукты, предприятие, динамический анализ, Воеводина