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Requirement, feasibility and possible opportunities of determination of real tariff prices for non-wood herbal products

Odun dışı bitkisel ürünler için gerçek tarife bedelinin saptanmasının gerekliliği, olabilirliği ve muhtemel fırsatları

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Abstract

Consistent with the changes and the increase in demand for the forests in the society, utilization of forest products became significant. Non-wood herbal products, which constitute a significant part among non-wood forestry products, is an important source of income for State Forest Enterprises and forestry industry in domestic and international markets, however non-wood herbal products are generally neglected in the Turkish forestry industry. Within the scope of the study, it was aimed to determine the income earned from the sales of *Vaccinum sp*., *Arumitalicum*, *Galanthus woronowii* and Cyclamen sp. species which are produced under the Sürmene State Forestry Enterprise management and the proportional distribution of these incomes between channel members. The share received from income of distribution channel members was determined by evaluating data obtained from Sürmene State Forestry Enterprise Production Tables and the records of a joint-stock company trading non-wood herbal products in Sürmene via percentage analysis method. In Turkey, an analysis of distribution of income among the members of non-wood herbal products distribution channels would reflect an unfair distribution. Most of the revenues are kept by wholesalers and especially retailers if present, while raw material producer State Forestry Enterprise and raw material gatherer forest villagers do not get their fair share. One of the major problems behind this is the low tariff prices. The extremely law tariff rates adversely affects the economic success of State Forestry Enterprise and active and productive use of resources by the enterprise. To resolve these problems, the actual tariff rates should be calculated for non-wood herbal products and the production and trade of these products should be conducted based on these rates and enforced policies should support rural development.

Özet

Günümüzde toplumun ormanlara yönelik talebinin değişmesi ve artmasına koşut olarak odun hammaddesi faydalanmasının yanında odun dışı orman ürünlerine yönelik faydalanma da önem kazanmıştır. Odun dışı orman ürünleri içerisinde önemli bir yer tutan odun dışı bitkisel ürünler ülke içi ve dışı pazarlar göz önüne alındığında, devlet orman işletmeleri ve ormancılık sektörü için önemli bir gelir kaynağı olmakta ve fakat odun dışı bitkisel ürünler, Türkiye ormancılık sektöründe gereken önemi görememektedir. Çalışma kapsamında, Trabzon Bölge Müdürlüğü'ne bağlı Sürmene Devlet Orman İşletmesinin, üretimini gerçekleştirdiği ayı üzümü, sıklamen, yılanyastığı ve kardelen türlerinden elde edilen gelirlerin belirlenmesi ve elde edilen gelirlerin, dağıtım kanalında yer alan kanal üyeleri arasındaki oransal dağılımının ortaya konulması amaçlanmıştır. Sürmene Devlet Orman İşletme Müdürlüğü üretim cetvelleri ve Sürmene'de odun dışı bitkisel ürünlerin ticaretini yapmakta olan tek bir anonim şirketin kayıtlarından elde edilen veriler, yüzde çözümlemesi yöntemiyle değerlendirilerek dağıtım kanalı üyelerinin gelirden aldığı paylar belirlenmiştir. Odun dışı bitkisel ürünlerin dağıtım kanallarında yer alan kanal üyeleri arasındaki gelir dağılımı incelendiğinde adil olmayan bir dağılımın mevcut olduğu görülmektedir. Elde edilen gelirin ağırlıklı bir kısmı toptancılarda ve özellikle varsa perakendecilerde kalmakta, hammadde toplayıcısı orman köylüleri ve hammadde üreticisi Devlet Orman İşletmesi bu paylaşımdan hakça bir pay alamadığı görülmektedir. Bunun altında yatan önemli kök sorunlardan biri, tarife bedelinin düşüklüğüdür. Tarife bedelinin bu derece düşük olması, Devlet Orman İşletmelerinin iktisadi başarısını düşürmekte ve kaynaklarını etkin ve verimli kullanılmasını olumsuz etkilemektedir. Bu olumsuzlukların düzeltilmesi için odun dışı bitkisel ürünlerin gerçek tarife bedelleri hesaplanmalı, bu ürünlerin üretimi ve ticareti bu bedel üzerinden yapılmalı ve uygulanan politikalar, kırsal kalkınmayı da destekleyecek şekilde olmalıdır.

INTRODUCTION

The forest ecosystems that cover about 1/3 of the world's surface and about 1/4 of the surface of Turkey were utilized in the past and continue to be utilized in various forms today (Geray 1998). These areas are primarily used for housing and nutrition, followed by raw material resources. Among these benefits, which could be considered as traditional forms of utilization of forest resources, the utilization of these areas for wood raw materials is still significant in several countries (Türker et al. 2002). For centuries, forest resource management has been targeted throughout the world to maximize the production of wood raw materials, non-wood and environmental benefits have not been taken into consideration, or have been considered as side product of wood production (Açıkgöz Altunel 2011). However, in recent years, worldwide socioeconomic, ecological, and cultural changes have led to a paradigm shift in forestry and forest management (Kilchling et al. 2009). In other words, while the forest ecosystems provided predominantly wood raw materials in the past, utilization of non-wood forest products became significant in parallel with the changing and increasing demand of the society from forests in the present day.

Non-wood forest products (NWFP) could be defined as all vegetal or animal products that grow in the forests and glades and used by other living organisms for their needs or to gain revenues by trading them (DPT 2001). However, it was emphasized that it is not enough to restrict the concept of NWFP to plant and animal products grown only in the forests and glades and this concept should also include all the benefits obtained from forestry resources except wood products. Therefore, NWFP became a concept that includes utilizations such as recreation, animal grazing, carbon retention, oxygen generation, gene supply, and preservation of soil that are obtained from forest resources (Özuğurlu and Düzgün 2000).

On the other hand, considering the management and businesses in Turkish forest eco-systems, NWFP are defined as biological and mineral products that originate in from forests and trees and other products that are side products of wood production such as bark, chips, shrubs, roots, logs and cones (OGM 2016). It is understood from the definition that in the management and processing of non-wood forest products obtained in forest ecosystems in Turkey, non-wood herbal products (NWHP) occupies a significant place and these products are widely used in domestic market or domestic economy especially by forest villagers (Türker et al. 2006).

The biodiversity in Turkish forests and its broad cultural heritage increase the ability to produce non-wood herbal forest products, but NWHP could not occupy he space it deserves in Turkish forestry. It was determined that this problem was due to the incomplete understanding of forest ecosystems, the management and operational problems in Turkish forestry, and conducting production with low tariff prices (Türker et al. 2016).

In this article, it was aimed to determine the path NWHP follows from production to consumption, in other words to determine the distribution channels, the revenues of each component in the distribution channel, and the distribution of revenues among the channel members. Furthermore, the impact of the low tariff prices on the sale of non-wood herbal products on the economic success of State Forest Enterprises (SFE), conducting assessments on the development of forest villagers in this process, and the necessity for identification of real tariffs for NWHP and their feasibility and possible opportunities are among the main objectives of the present study.

MATERIAL AND METHODOLOGY

Sürmene SFE Directorate production and profit and loss tables, the records of a joint stock company trading NWHP, and related scientific studies that were examined to reach the study objective are the main material of the present study.

The SFEs that conducted non-wood herbal product production in Trabzon Forest Regional Directorate were identified and it was determined that *Vaccinum* sp. (Bearberry), *Arumitalicum* (Peltandra), *Galanthus woronowii* (Black Sea snowdrop) and Cyclamen sp. (Cyclamen) species were produced under tariffs at Sürmene State Forestry Directorate. Thus, Sürmene SFE was selected as the study area. Production quantities of

related species were obtained from Sürmene SFE Directorate Production Tables.

Due to the fact that there is only one company that trades the non-wood herbal product in the Sürmene province, the data used in this study were obtained from this joint-stock company.

Field research studies demonstrated that *Vaccinum* sp. (bearberry) was not produced during recent years to preserve biodiversity, and thus the data obtained 10 years ago were used. Calculations were made using the exchange rates for that decade so that the data obtained are appropriate to the conditions of the time. Sürmene SFE Directorate revenues were calculated based on the 3-year production amounts (2014, 2015, 2016) for the other species and tariff prices for the related species. The income distribution ratios of distribution channel members are based on the income division of the revenue generated by the last member of the distribution channel chain.

2006 exchange rates were used in determining the bearberry revenues; the following average exchange rates for the Turkish Lira (TL), Euro (EUR) and United States Dollar (USD) currencies were used: 1 USD≈ 1.43801, 1 EUR ≈ 1.80868 TL and 1 EUR ≈ 1.25776 USD (URL, 1, 2017).

The information about the income of the forest villagers who collect the aforementioned species and the trading company revenues were obtained with the interviews conducted with the officers of the joint stock company. As a result, the revenues obtained during the processes of production and distribution of non-wood herbal products and the percentage revenues obtained by the channel members as a share of the total revenues are presented.

FINDINGS

The path that 4 NWHP, that are located and produced in Sürmene SFE Directorate fields, namely the bearberry, peltandra, snowdrop and cyclamen, followed from the producer to the consumer was observed and determined that the path was mostly as follows (Figure 1).

Figure 1. Non-wood herbal product trade distribution channel

***Vaccinum* sp. (Bearberry) revenues**

Vaccinum sp. (bearberry) is a protected species and is not currently produced. As a result of this negotiations with the owner of the joint stock company that used to trade this product, 10 year old figures for this product were obtained and used. The the joint-stock company rep said that they used to procure about 10 - 15 tons of product per year from Sürmene SFE Directorate and paid 0.32 kr. (0.22 USD) per kg tariff price to Sürmene SFE Directorate, and 1.50 TL (1.04 USD) for wet purchases and 2 TL (1.39 USD) for dry purchases to forest villagers. The company, which obtained the product at a cost of 1.82 TL (1.27 USD) or 2.32 TL (1.61 USD) per kilogram, exported this product as dried fruit directly to the international pharmaceutical industry at 9-10 Euro/kg (11.32-12.58 USD) and companies that purchase this product and process it to sell as an end product at a price of 40-50 EUR (50.31-62.89 USD). However, the processes the company that received the product conducts on the product and the cost of these processes are not known. Therefore, the costs related to the pharmaceuticals industry, which is the last member of the distribution channel, are ignored while calculating the share of the pharmaceuticals industry.

As a result of the calculations, it was determined that Sürmene SFE Directorate earned the tariff price of 2225.30 USD for 10200 kg of bearberry production, forest villagers who collected the product, earned 13908.11 USD, and the company that exported the product earned 125776 USD (Table 1).

Figure 2 shows the distribution of income between distribution channel members. It has been determined that the least amount of income obtained is the state forest operation while the largest share is taken by the retailer.

Table 1. *Vaccinum* sp. (bearberry) Revenues

	Collected Product (kg)	Tariff Price Paid (kg)		*Vaccinum* sp. Revenues Earned by Channel Members (USD)			
		TL	USD	Sürmene SFE	Forest Villagers	Wholesaler	Retailer
Revenue (USD)	10000	0.32	0.22	2225.3	13908.1	125776.0	628880
Share in Total Income (%)				0.4	2.21	20	77.39

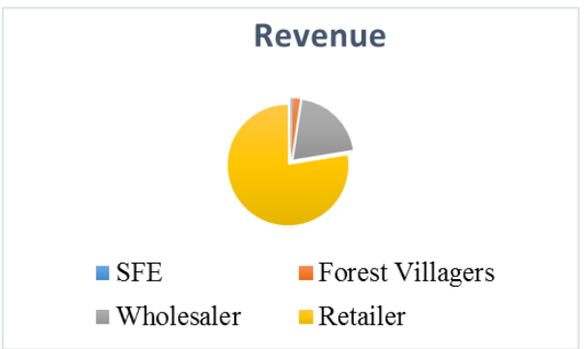

Figure 2. *Vaccinum* sp. (bearberry) Revenues

Cyclamen sp. (Cyclamen) revenues

Based on the information obtained from the Sürmene SFE Directorate production records, there was no cyclamen production in 2014. On the other hand, it was determined that 2090 kg were produced in 2015, the forest villagers earned the small amount of 2.5 TL (0.90 USD) per kg, 0.22 kr (0.08 USD) per kg tariff price was paid to the state forest enterprise. And joint-stock company has sold the product at 6.5 TL (2.34 USD) per kg in the domestic market. In 2016, 1000 kg cyclamen were produced, tariff price paid to the state forest enterprise per kg was 0.21 TL (0.07 USD), 2.55 TL (0.85 USD) per kg was paid to the forest villagers, and the wholesaler sold this product to the domestic market for 18 TL per kg (6.05 USD). The revenues from the product trade, grouped based on years, are presented in Table 2.

Table 2. Cyclamen Revenues

Years	Collected Product (kg)	Tariff Price Paid (kg)		Cyclamen sp. Revenues Earned by Channel Members (USD)		
		TL	USD	Sürmene SFE	Forest Villagers	Wholesaler
2014	0	0.21	0.10	0.00	0.00	0.00
2015	2090	0.22	0.08	167.2	1881	4890.6
2016	1000	0.21	0.07	70	850	6050

Arum Italicum (Peltandra) revenues

Based on the information obtained from the Sürmene SFE Directorate production records, in 2014, 1229 kg peltandra was produced. The forest villagers were paid 2.5 TL (1.14 USD) per kg, the state forest enterprise was paid 0.30 kr. (0.14 USD) per kg based on the tariff prices. The joint-stock company has sold the product for 7 TL (3.24 USD) per kg in the domestic market. In 2015, 1135 kg peltandra was produced and forest villagers were paid 3 TL (1.1 USD) per kg, the state forest enterprise was paid 0.33 kr. (0.12 USD) per kg based on the tariffs and the wholesaler sold this product for 7 TL (2.55 USD) per kg in the domestic market. It was observed that peltandra was not produced in 2016 based on Sürmene SFE Directorate production records (Table 3).

Table 3. Peltandra Revenues

Years	Collected Product (kg)	Tariff Price Paid (kg)		Peltandra Revenues Earned by Channel Members (USD)		
		TL	USD	Sürmene SFE	Forest Villagers	Wholesaler
2014	1229	0.30	0.14	172.06	1401.06	3981.96
2015	1135	0.33	0.12	136.2	1248.5	2894.25
2016	0	0.35	0.12	0.00	0.00	0.00

***Galanthus woronowii* (Snowdrop) revenues**

Based on the data obtained from Sürmene SFE Directorate production records, snowdrop production was 5010 kg in 2014. The distribution of revenues among the distribution channel members demonstrated that the forest villagers earned 6.50 TL (2.96 USD) per kilogram, the state forest enterprise was paid 0.60 kr. (0.27 USD) per kilogram, and the wholesaler that purchased the product sold it at 10.40 TL per kilogram (4.73 USD). In 2015, 11517 kg snowdrop were produced, state forest enterprise was paid 0.66 kr. (0.24 USD) tariff price per kg. The forest villagers were paid 7 TL (2.57 USD) per kg and the wholesaler sold the product it purchased for 11.6 TL (3.85 USD) per kilogram in the domestic market. In 2016, it was observed that 9509 kg snowdrop is produced and in the state forest enterprise was paid the tariff price of 0.70 kr. (0.23 USD) per kg. In the same year, the forest villagers were paid 7 TL (2.33 USD) per kilogram for the snowdrop product and the wholesaler sold this product in the domestic market for 12.3 TL (4.09 USD) per kg (Table 4).

Table 4. Black Sea Snowdrop Revenues

Years	Collected Product (kg)	Tariff Price Paid (kg)		Black Sea Snowdrop Revenues Earned by Channel Members (USD)		
		TL	USD	Sürmene SFE	Forest Villagers	Wholesaler
2014	5010	0.60	0.27	1352.7	14829.6	23697.3
2015	11517	0.66	0.24	2764.08	29598.69	44340.45
2016	9509	0.70	0.23	2187.07	22155.97	38891.81

Arumitalicum (snake cushion), *Galanthus woronowii* (Black sister sister) and Cyclamen sp. (Cylinder) distribution channels consist of the same members. *Arumitalicum* and Cyclamen sp. while the channel member receiving the most share in the species was the wholesaler joint-stock company, the *Galanthus woronowii* species became the forest villager with the highest share of the channel income. Bearberry, another plant species investigated in the study, trade figures demonstrated that there was retailers in the distribution channel, different from that of the above mentioned products, and the retailer earned the biggest share in revenues (Table 5). Table 5 shows the percentage distribution of annual income to distribution channel members. Table 5 does not include the percentage distribution of income of *Vaccinum* sp. (Bearberry) distribution channel members because it had already stated in Table 1.

Table 5. Distribution of Annual Revenues among the Distribution Channel Members

Years	CYCLAMEN			PELTANDRA			SNOWDROP		
	Sür.SFE	For. Vill.	Whole saler	Sür. SFE	For. Vill.	Whole Saler	Sür.SFE	For. Vill.	Whole Saler
2014	0.00	0.00	0.00	4.32	35. 19	60.49	5.59	62.58	31.18
2015	3.42	38.46	58.2	4.71	43.14	52.5	6.23	66.75	27.02
2016	1.16	14.05	84.79	0.00	0.00	0.00	5.62	56.97	37.41
Average	2.29	26.26	71.50	4.52	39.17	56.50	5.81	62.1	31.87

DISCUSSION AND CONCLUSION

Sürmene SFE Directorate production and profit-loss statements demonstrated that 0.57% of the total revenues obtained in 2013, 0.29% of the total revenues in 2014 and 0.63 % of the total revenues in 2015 were obtained from the production of non-wood herbal product production (OGM 2013, 2014, 2015). The investigations conducted in the present study revealed that the same approach that is parallelto the wood raw material production oriented forestry approach prevalent in Turkish forestry ecosystem management and operations continues at Sürmene SFE Directorate.

Similarly, the data obtained from Sürmene SFE Directorate production and profit-loss statements

determined that non-wood herbal products and recreation sites were considered within the scope of the NWFP. This could be regarded as a natural consequence of the consideration of non-wood herbal products mostly as NWFP in the forestry approach in Turkey.

As a result, Sürmene SFE seems to have received the lowest revenues from the production and trade of related non-wood herbal products. Three year mean figures obtained in the present study conducted with Black Sea snowdrop, cyclamen, peltandra and bearberry demonstrated that the revenue shares of the Sürmene SFE Directorate were 5.81%, 2.29%, 4.52%, and 0.4% respectively (See Table 1 and 5).

Revenue distribution percentages demonstrated that the forest villagers who are on the distribution chain and who collect the related herbal products also earned a very small income. As a matter of fact, it was determined that forest villagers' shares from the production and trade of Black Sea snowdrop, cyclamen, peltandra and bearberry were 62.10%, 26.26%, 39.17% and 2.21% respectively (Table 1 and 5).

With this marketing method, the raw material NWHP are subjected to little processing and the added value is mainly left to wholesalers and especially to retailers. In other words, there is a process where the raw material producer SFE and the raw material collector forest villagers cannot receive a fair share of the revenues (Türker 2014). In conclusion, on national accounts, the classification of NTFP should be made to ensure that the value is calculated correctly and that the gross national product should be given the right place (Açıkgöz Altunel 2011).

In the present study, it was determined that state forest enterprises and forest villagers earn very low income from non-woody herbal forest products and there is an unfair income distribution among the channel members. To remove this unfair income distribution, it should first be ensured that the contemporary forestry approach (Geray 1989) is prevalent in Turkish forestry, taking into account the constraints of both the country and industry, balancing monetary benefits with other benefits and resolving the problem of budgeting resources for different economic activities. Forests should be considered as a whole as an ecosystem, and the production conducted in this ecosystem should be planned, operated and managed taking into account the production potential. In different words, the prevalent approach of exploiting wood raw materials in the forest ecosystems in Turkey should be abandoned and all plans including the development plans and the implementation plans should include objectives, strategies and policies for non-wood forest products.

The prevalence of the above mentioned wood raw material oriented forestry approach in Turkey have resulted in the problem of considering non-wood forest products as secondary products and these products were neglected. Non-timber forests products provide multiple livelihood benefits to local communities and regional and national economies (Shackleton and Pandey, 2014). However, due to lack of relevant information on the level of output of such products, its economic significance was seldom accounted for in the valuation of forests (Mahapatra and Tewari 2005).

The use of centralized tariffs that do not reflect current prices in NWHP sales could be considered as a result of this approach. The use of low tariffs in the production and trade of NWHP resulted in limited revenue shares earned by SFE among the distribution channel members, which in turn negatively affected the active and efficient management and operation of forest enterprises. In conclusion, it could be argued that NWHP production with centralized tariffs that is incompatible with the business approach should be abandoned and a careful study should be conducted to determine the real and local tariffs.

When the principle of calculating the actual tariff prices in wood raw material is considered, the actual tariff rates for NWHP could be calculated by taking the selling price of NWHP and the costs incurred in production into account. With the calculation of the actual tariff rates, the income of the state forest enterprises, which receive the least share in the income generated by the production and trade of these products, would increase and this increase

in revenues would also improve the economic success of the SFEs.

When NWHP are produced based on the real tariff rates, the significance of these products for forest enterprises that would then have the opportunity for economic success, would increase, and new opportunities will be achieved in rural development by employing forest villagers in the production of these products. However, the degree to which non-timber forest products actually or may potentially contribute to rural incomes is poorly documented (Hegde et al. 1996). Therefore, the number of researches carried out in this field should be increased.

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