

The Economics of Laurel Harvesting: Socio-Economic Drivers of Non-Timber Forest Product Utilization in Rural Southern Türkiye

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This study aimed to assess the economic efficiency of laurel harvesting (*Laurus nobilis* L.) in Andırın, Kahramanmaraş, Türkiye. To achieve this, a household survey with 51 participants involved in laurel harvesting was conducted to identify the socio-economic factors influencing laurel harvesting. Principal component analysis (PCA), Sperman's correlation analysis, and multiple linear regression modeling were conducted to analyze the relationships between socio-economic factors and laurel harvesting. Exploratory analysis of the dataset showed that laurel is an essential income source for almost 90% of households, particularly during agricultural off-seasons. However, only about 10% of the respondents considered laurel harvesting a profitable business. Statistical analyses revealed that distance to the town-city center, daily harvest earnings, and selling location are key factors in determining profitability from laurel harvesting. The current study's evidence strongly supported the conclusion that market asymmetries and socio-economic heterogeneity shaped the viability of non-timber forest product-based livelihoods. On the other hand, the findings directly supported the Multiple United Nations Sustainable Development Goals (SDGs), particularly SDG 1 (No Poverty), SDG 8 (Decent Work and Economic Growth), SDG 12 (Responsible Consumption and Production), and SDG 15 (Life on Land). Enhancing local producer autonomy in pricing and market access emerged as a crucial factor in promoting equitable and sustainable laurel utilization in rural forest economies.

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INTRODUCTION

Approximately 60 million indigenous people are almost entirely reliant on forests, while over 350 million people residing in or near the world's tropical forests are heavily dependent on this ecosystem (World Bank 2006). Forests provide a diverse range of products for both domestic and industrial utilization (Appiah 2009), which can be categorized as timber and non-timber forest products (NTFPs). While timber products are globally recognized and highly valued, NTFPs are equally crucial in sustaining the livelihoods of communities inhabiting forested areas, yet they often receive limited recognition or attention (Suleiman *et al.* 2017; Demie 2019; Gelan 2023). Following the Rio Earth Summit in 1992, their significance has experienced substantial growth (Ndo *et al.* 2024). As sustainable development and climate resilience gain prominence in global

policy agendas, the multifunctional role of NTFPs in supporting both ecosystems and economies has become increasingly acknowledged.

The NTFPs have long been an integral component of the socio-economic fabric of rural communities worldwide (Bwalya 2011; Mukul *et al.* 2016; Pandey *et al.* 2016; Amrita and Singh 2023). These products serve as essential resources for food security, income generation, and cultural practices (Ojea *et al.* 2016; Ickowitz *et al.* 2019; de Mello *et al.* 2020; Nghonda *et al.* 2023). The NTFP gatherers predominantly belong to impoverished communities that harvest and sell valuable forest products, such as wild fruits, honey, medicinal plants, and latex, to generate income. They also collect tubers, fruits, and firewood for their own consumption (Shukla *et al.* 2022). In this context, the NTFPs act not only as subsistence resources, but also as safety nets and steppingstones to broader rural development.

Globally, studies on NTFPs have highlighted the significant influence of socio-economic factors on resource harvesting and marketing practices. In numerous developing countries, the economic potential of NTFPs presents both opportunities and challenges for rural development (Amusa *et al.* 2017; Rahman 2021; Gelan 2023). The socio-economic factors that influence NTFP harvesting exhibit a diverse range and often intricate nature. These factors encompass household income, education, age, market access, land tenure, and natural resource availability (Newton *et al.* 2012; Dewees 2013; Rahman 2021). Furthermore, global market trends and evolving consumer demand for natural products can affect harvesting practices and local economies (Maua *et al.* 2018; Gatiso 2019).

Türkiye possesses substantial potential to cultivate NTFPs. However, managing these resources presents considerable challenges. Some of these challenges are associated with the production process, while others are related to the marketing of the products. The NTFP production is carried out by private individuals and companies in collaboration with the General Directorate of Forestry (GDF), which represents the government sector (Yıldırım and Köse 2013). One of the crucial plants for essential oils and spices in Türkiye is laurel, which holds significant importance in the country's foreign trade. Approximately 90% of the global demand for laurel is met by Türkiye.

Laurus nobilis L. is the sole naturally occurring species of laurel in Turkey. This evergreen maquis plant can grow between two and ten meters in height, resembling a small tree or shrub due to its densely branched, dioecious structure. Its neat appearance is attributed to its extensive root system and branches that rise parallel to the trunk. The trunk's bark is dark grey-black and smooth, while the fresh shoots initially appear green, later turning reddish-black and hairless. The most valuable parts are its leaves and fruits, from which essential oils, fixed oils, and various raw materials are extracted. Although it can be used as an ornamental plant, inadequate and costly production of seedlings restricts its use (GDF 2022). Laurel trees are primarily utilized in maquis regions, where intensive forestry activities are not prevalent. Consequently, the road network in these areas is generally inadequate, limiting transport options and increasing production costs. Moreover, the lack of road infrastructure hinders mechanized work, preventing the economic benefits of laurel cultivation in such regions. The inadequacy of semi-automated equipment is actually in favor of rural people looking for opportunities (GDF 2016).

Beyond its use as a spice, the utilization of laurel in food supplements, cosmetics, and other industries has experienced substantial growth and expansion in recent years. In addition to the essential oil extracted from its leaves, the fixed oil extracted from its seeds is also widely utilized in various industries (GDF 2016). The laurel plant, which thrives along the Mediterranean coast, is distributed in certain regions of the Mediterranean,

Aegean, Marmara, and Black Sea regions of Türkiye (Republic of Türkiye Ministry of Industry and Technology 2022). Despite its growing global demand, the localized socio-economic dynamics of laurel harvesting, especially in rural districts such as Andırın, remain underexplored.

This research directly aligns with multiple United Nations Sustainable Development Goals (SDGs), particularly SDG 1 (No Poverty), SDG 8 (Decent Work and Economic Growth), SDG 12 (Responsible Consumption and Production), and SDG 15 (Life on Land). By investigating the economic potential of the NTFPs such as laurel, the study contributes to discussions on sustainable forest utilization, poverty alleviation, and inclusive rural development.

This study aims to investigate the socio-economic factors that influence laurel harvesting in the Andırın district of Kahramanmaraş province. The study focuses on how these factors shape local livelihoods and affect the sustainability of harvesting practices. Specifically, the research seeks to answer the following questions:

(1) Which socio-economic variables (*e.g.*, household income, education, age, market access, and land ownership) influence laurel harvesting practices in Andırın?

(2) How do these socio-economic factors affect the income generation and economic stability of local harvesters? By addressing these issues, this study provides a comprehensive understanding of the socio-economic dynamics of NTFP harvesting in rural Türkiye. The results offer valuable insights into how local communities balance economic, social, and environmental considerations when using natural resources. Ultimately, the research aims to inform policy and management strategies that support sustainable harvesting practices while improving the economic livelihoods of rural households.

EXPERIMENTAL

Study Area

Kahramanmaraş is one of the five provinces with the largest *Laurus nobilis* distribution area in Türkiye (UNDP 2019). Figure 1 show the laurel inventory amounts (tons) and inventory areas (ha) in Türkiye according to the ranking of the top five provinces (GDF 2022).

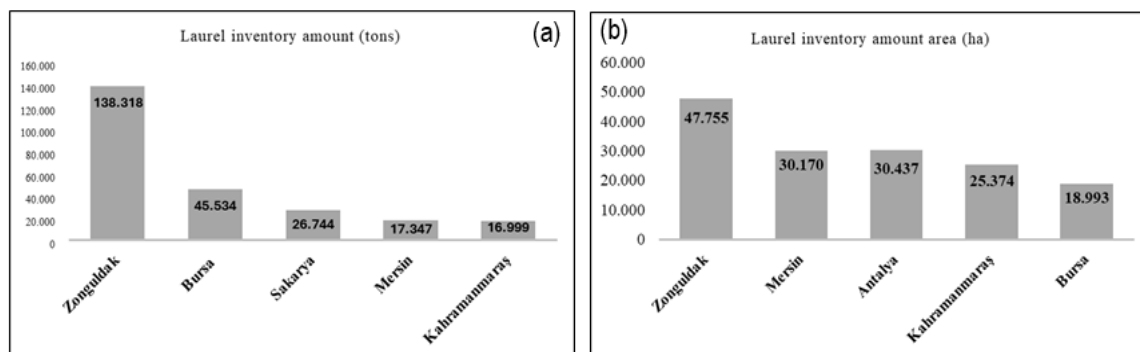


Fig. 1. a) Laurel inventory amount (tons); and b) Laurel inventory area (ha) based on ranking of top five provinces

The district of Andırın, where laurel harvesting is a significant source of income, was selected as the study area (Fig. 2). The Kahramanmaraş Regional Directorate of

Forestry has permitted villagers to access laurel fields in Andırın, enabling an annual harvest of approximately 2,000 tons of laurel. This provides a substantial source of income for the local community and supports the regional economy. Consequently, the laurel harvest in the Andırın district of Kahramanmaraş contributes significantly to Türkiye's exports (URL 2024). The villages selected as the study area fall under the jurisdiction of Andırın and Yeşilova forest planning unit in the Andırın Forest Enterprise. The laurel areas around Başdoğan village have a slope between 15% and 20% and an elevation between 650 and 800 meters. The slope of laurel areas around Gökçeli ranges from 30% and 35% and at elevations of 1000 to 1100 meters. Both villages' laurel areas are agricultural in land use class. However, these areas are generally located on northwest slopes (Anonymous 2014).

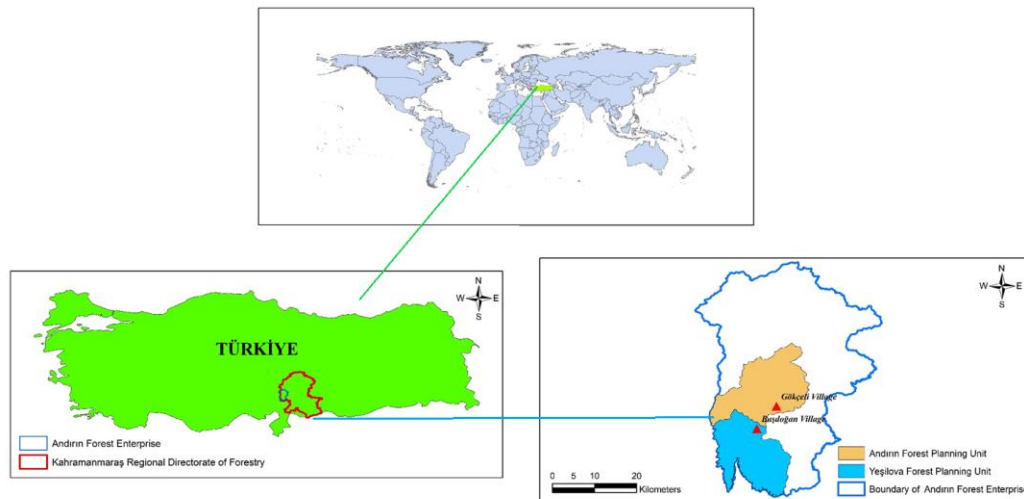


Fig. 2. Study area

According to the 1/25,000 scale national topographic map, the forests within the boundaries of the Andırın Forest Management Directorate are situated between 37°20'44" and 37°50'25" North latitudes and 36°12'49" and 36°36'24" East longitudes. The extent of the forest areas managed by this directorate is presented in Table 1 (GDF 2024).

Table 1. Andırın Forest Management Directorate – Forest Area (ha)

Type	Ha
High forest	46037,2
Degraded high forest	35132,3
Forest area	81169,5
%	67,79
Open area	38552,1
Total area	119721,6

Data Collection and Sampling Techniques

The sampling frame consisted of all households residing in two forest villages within the Andırın Central Forest Sub-District Directorate. A total of 51 households that actively participated in laurel harvesting were interviewed. Primary data were collected using a two-page structured questionnaire comprising the sections on household demographics, livelihood strategies, and specific details related to laurel harvesting.

Secondary data were gathered from the governmental sources and the relevant literature. The survey consisted mostly of semi-structured questions, complemented by a few open-ended items to allow qualitative elaboration. All surveys were administered through face-to-face interviews. The unit of analysis was the household head; however, in cases of unavailability, another adult household member (aged 18 and above) was considered a valid respondent.

The primary aim of the survey was to assess the socio-economic role of laurel harvesting within household livelihoods in forest-dependent communities. Both qualitative and quantitative data analysis approaches were used to interpret the findings.

Data Analysis

All analyses were conducted using SPSS version 24 (SPSS Institute Inc., 2012) and R version 4.4.3 (R Core Team 2025). Firstly, descriptive statistics, including frequencies, percentages, means, and standard deviation, were calculated to summarize the socio-demographic profile of respondents. Next, the following statistical analyses were performed in order to ascertain how socio-economic factors (explanatory variable) affect the economic contribution of laurel harvesting (outcome variable).

1) Principal component analysis (PCA) was conducted to identify redundant variables in the present dataset, which involved numerous variables. PCA was further performed to determine the groups of explanatory variables that could potentially drive the process of laurel harvesting.

2) Spearman's correlation coefficient was utilized to explore the relationships between socioeconomic variables.

3) A multiple linear regression model was developed using the backward variable selection method to identify the significant socio-economic variables. To avoid multicollinearity issue in modeling, the potential collinearity between the explanatory variables was tested using the variance inflation factor (VIF), with a threshold value of five or less.

RESULTS AND DISCUSSION

Results

Descriptive profile of households

Household socio-economic and demographic characteristics play an important role in influencing laurel harvesting. Descriptive statistics were used to describe the socio-economic characteristics of the participants. The socio-economic characteristics of households are presented in Table 2. According to Table 2, the proportion of men was 90.2% ($n = 46$) of the gender distribution in the total sample population. It can be said that the household heads are in the middle age group in terms of mean age ($M = 50.01$, $SD = 9.62$). In terms of educational attainment, 88% of household heads have completed secondary school (62.8%, $n = 32$) and primary school (25.5%, $n = 13$). Approximately 61% of household heads ($n = 31$) reported that they were self-employed, while the proportion of part-time workers was 11.8% ($n = 6$) and 17.6% ($n = 9$) of those reporting that they were unemployed. The average household size in the sample villages was 4.11 ($SD = 1.45$). The proportion of those in the villages who report that their monthly income is between 10001 and 20000 Turkish Lira (TL) is 52.9% ($n = 27$). Looking at the livelihood opportunities of

the households, it can be seen that more than half of the participants (52.9%; n=27) earn their livelihood by simultaneously engaging in forestry-agriculture-livestock activities.

Table 2. Socio-economic Characteristics of Households

Variable	Items	M (SD)	%	n
Gender	Male		90.2	46
	Female		9.8	5
Age (years)		50.01 (9.62)		
Education	None		7.9	4
	Primary		25.5	13
	Secondary		62.8	32
	Tertiary		4.0	2
Employment	Full time employed		9.8	5
	Part-time employed		11.8	6
	Self-employed		60.8	31
	Unemployed		17.6	9
Average income (monthly)	<10000 TL		23.5	12
	10001-20000 TL		52.9	27
	20001-30000 TL		19.6	10
	>30001 TL		3.9	2
Household size		4.11 (1.45)		51
Distance to town-urban center (km)		5.68 (1.61)		
Livelihoods	Forestry		7.8	4
	Forestry-Agriculture		13.7	7
	Forestry-Livestock		15.7	8
	Agriculture-Livestock		2.0	1
	Forestry-Agr. -Livestock		52.9	27
	Forestry-Pension		5.9	3
	Other		2.0	1

M: Mean, SD: Standard deviation, n: Subset of the sample

Principal component analysis

The spatial relationships between the variables and the percentage contribution of the variables are presented in Fig. 3. In the figure, the variables are identified by the abbreviation 'Var'. Accordingly, the abbreviation and the name of each variable are as follows: Var1: *distance to town-city center (km)*; Var2: *gender*; Var3: *age group*; Var4: *age*; Var5: *education*; Var6: *number of household*; Var7: *employment status*; Var8: *monthly household income*; Var9: *household livelihood*; Var10: *number of animals*; Var11: *grazing livestock*; Var12: *work in forestry*; Var13: *ownership of harvested land*; Var14: *number of days worked at harvest*; Var15: *annual production quantity (ton)*; Var16: *daily harvest earnings*; Var17: *where to sell the harvested laurel*; Var18: *who determines the selling price*; Var19: *annual profit from laurel production*; Var20: *working status in operations other than harvesting*; Var21: *the adequacy of the income from the harvest*; Var22: *number of persons in the household involved in laurel harvesting*; Var23:

transporting the harvested laurel; Var24: who do you act through when producing laurel?; Var25: problems encountered at harvest time; and Var26: economic contribution of laurel harvest

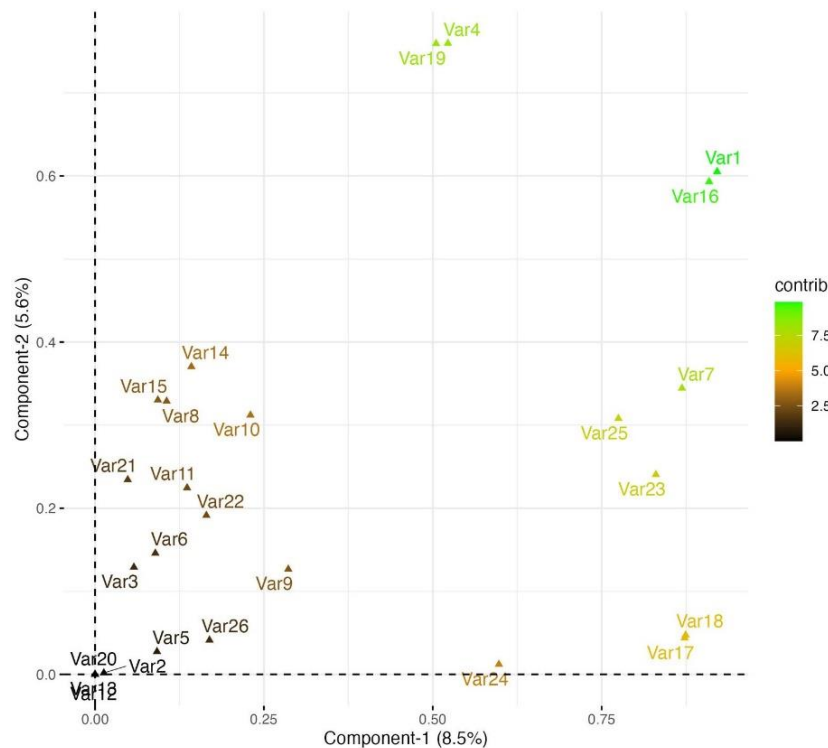


Fig. 3. The positions of the variables in the plane of the two principal components

Figure 3 illustrated the first two components that accounted for 14% of the total variability in the dataset. When considering variable groups in the first and second components, the figure primarily indicates that socio-economic factors exhibited quite diverse influences. The figure also demonstrates how each variable contributed to these components. As seen in the figure, Var1 and Var16 accounted for the highest amount of variability, followed by Var7, Var25, Var23, Var18, and Var17 in descending order. These variables can be interpreted as spatial, economic, governance, and logistical factors that influence the economic contribution of laurel harvest. Notably, Var1, Var16, Var17, and Var18 reflected market access, income level, and market control. This suggests that the economic return of laurel harvest is influenced not only by biophysical production factors but also by market structure and producer power. Additionally, Var4, Var9, Var10, and Var19 moderately affected the laurel harvest, while variables Var2, Var12, Var13, and Var20 insignificantly affected it.

On the other hand, PCA analysis revealed that the dataset could be roughly clustered into three groups: one comprising Var1, Var16, Var7, Var23, Var25, Var18, Var17, and Var24; another group consisting of Var4 and Var19; and a third group encompassing the remaining variables. Within each group, variables closely positioned to each other exhibited a stronger relationship. For instance, there was a positive and strong relationship between Var1 and Var16.

Correlation analysis

The study used Spearman's rank correlation coefficient to test whether there is a linear relationship between the variables, the direction of the relationship, the strength of the relationship and the significance of the relationship. The correlation coefficient varies between -1 and 1, where -1 indicated a perfect negative relationship between the variables, 1 indicates a perfect positive relationship and 0 indicates that there is no relationship between the variables (Pallant 2020). Table 3 showed the relationship levels of the correlations and the criteria according to which they will be evaluated.

Table 3. Spearman Correlation Coefficient and Interpretations

Spearman Correlation Coefficient	Correlation
≥ 0.70	Very strong relationship
0.40-0.69	Strong relationship
0.30-0.39	Moderate relationship
0.20-0.29	Weak relationship
0.01-0.19	No or negligible relationship

The Spearman correlation analysis revealed that certain variables, identified as significant contributors in PCA analysis, exhibited positive and negative close relationships with various variables at different levels (Fig. 4).

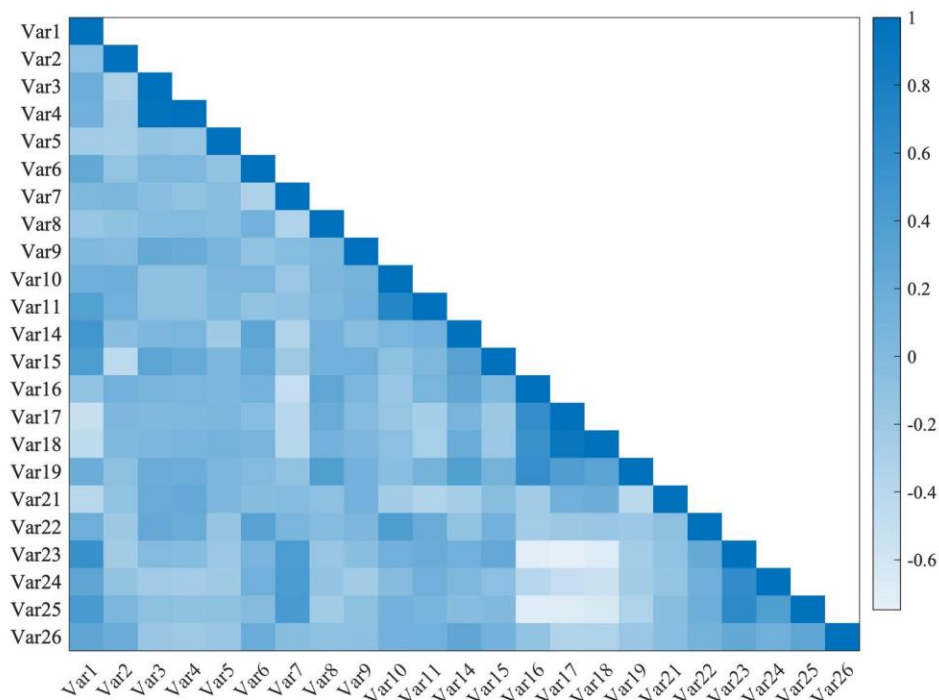


Fig. 4. Intervariable correlation matrix with Spearman's rank coefficients for all variables considered in the analysis. The coefficient < 3 and the coefficient > -3 show insignificant relationships

For instance, Var23 exhibited a high correlation with Var16, Var17, and Var18. Similarly, there was a strong correlation between Var25 and Var16. These variables represent the primary structural and socio-economic components that determine the economic contribution of laurel harvesting. Additionally, moderately correlated variables (e.g., Var4, Var7, Var24) reflect the effects of logistics and individual production

conditions on the laurel harvest, while low-correlated variables (*e.g.*, Var3, Var5, Var6) indicate the influences of limited supporting factors on it.

Multiple linear regression analysis

The outputs of multiple linear regression analysis confirmed the results of PCA and Spearman correlation analyses, suggesting that market access and logistical factors (transport and pricing) were found as significant factors influencing laurel harvest.

According to the regression model, Var3, Var14, Var18, Var21, and Var23 were significant predictors at a significance level of 0.05 (Table 4). The model explained 38.4% of the variation in the economic contribution of laurel harvesting ($F = 4.66$, $p = 0.001$). As shown in the table, Var18 was the most influential predictor in modeling laurel harvest, while Var21 was the least important. The other predictors were arranged in descending order as Var14, Var23, and Var3. On the other hand, Var14 and Var21 positively affected the laurel harvest, while Var3, Var18, and Var23 negatively affected it. These results suggest that an increase in the ages of inhabitants would decrease the tendency of attending the laurel harvesting. Considering the influence of Var18, the income of the inhabitants gaining from laurel harvesting would decrease in the following order: GDF, Factory, Headman, Cooperative, and Agent. Given the influence of Var23, the economic income would decrease as the harvested laurel would be transported through manpower and animals.

Table 4. Parameter Estimates with Standard Error in Brackets, Multicollinearity Diagnostics and Variable Importance for the Multiple Linear Regression Model

Variable	Estimates (Std. Err)	VIF	*Variable Importance (%)
Constant	2.40 (0.68)		
Var3 (Age group)	-0.02 (0.007)	1.22	14.81
Var14 (Number of days worked at harvest)	0.40 (0.10)	1.37	23.96
Var18 (Who determines the selling price)	-0.20 (0.05)	2.48	31.90
Var21 (The adequacy of the income from the harvest)	0.45 (0.23)	1.32	11.97
Var23 (Transporting the harvested laurel)	-0.51 (0.25)	2.45	17.34

*Variable importance was calculated utilizing the standardized coefficient of regression parameters.

DISCUSSION

The study's findings reveal that socio-economic factors significantly influence households' perceptions of the economic value of the laurel harvest. Notably, when the price-setting power is delegated to external actors, households tend to have a low perception of the economic contribution of the harvest. This suggests that market asymmetries directly impact local people's perception of income. These results are consistent with the literature (Amusa *et al.* 2017; Gelan 2023), which emphasizes the importance of transferring market power to local producers in reducing poverty (SDG 1: No Poverty) and fostering economic growth (SDG 8: Decent Work and Economic Growth). On the other hand, Shackleton *et al.* (2015) highlighted the significant influence of

qualitative factors, such as decision-making processes and product transportation, on rural production processes.

In regression analysis, the potential correlation between variables can obscure the significance (effect) of certain variables. In other words, a variable that actually has an impact may appear to have no effect. To address this issue, PCA was conducted to identify the most influential variables within the dataset. As a result, 10 variables (two of which are included in the regression model) were found to significantly contribute to the economic value of the laurel. Examining the correlation matrix, variables such as the location of selling the harvested laurel (Var17), daily earnings from harvesting (Var16), distance to the town-city center (Var1), and employment status (Var7) were found to have medium and high correlations with the variables in the regression equation (Zuur *et al.* 2010). Notably, these variables were not included in the regression model but were identified as crucial in the PCA analysis. These findings are agreement with similar studies in the literature, providing further support for their significance.

PCA also revealed the spatial dimension of socio-economic differentiation among households. This finding suggests that to ensure sustainable and inclusive development (SDG 15: Life on Land), local policies and practices should be tailored to household profiles. Specifically, empowering local producers in market access and price-setting processes, supporting participatory cooperative structures, and promoting public-NGO-private partnerships can ensure balanced and sustainable management of the laurel harvest (Bwalya 2011; Gatiso 2019; Ndo *et al.* 2024). Similarly, Moreira *et al.* (2017) and Duvivier *et al.* (2013) highlighted the significance of transport costs in determining the economic returns of forest products. They observed that as the distance to urban centers increases, transportation costs tend to rise, leading to a decrease in profitability. Conversely, for producers, proximity to urban centers may provide better access to markets and vehicles, potentially resulting in higher sales volumes and prices.

The PCA results revealed significant socio-economic disparities among households. Larger, older households perceived higher economic benefits from laurel harvesting compared to smaller, younger households. Notably, households with greater autonomy in price determination reported significantly higher economic satisfaction, underlying the importance of empowering local producers in market mechanisms. This finding agrees with multiple United Nations Sustainable Development Goals (SDGs), particularly SDG 1 (No Poverty) and SDG 8 (Decent Work and Economic Growth), highlighting the role of equitable market structures in poverty alleviation and economic resilience. The fact that older and more established households perceive higher economic benefits from the laurel harvest is crucial in terms of transforming social capital and traditional knowledge into economic benefits. On the other hand, younger households and households with alternative income sources perceived lower economic contributions from laurel, indicating differences in economic diversity and market independence (Newton *et al.* 2012; Mukul *et al.* 2016). These findings underscore the need for sustainable diversification of income sources under SDG 12: Responsible Consumption and Production. Gelan (2023) also found a positive relationship between age and NTFP collection using logistic regression analysis.

The distance to the city center significantly impacts market access costs and opportunities. Moreira *et al.* (2017) and Ali and Seebens (2011) highlighted that transportation costs and socioeconomic factors associated with distance to the city center affect the profitability of rural production. Consequently, laurel production may have higher income potential in areas close to urban centers (Duvivier *et al.* 2013). Ultimately,

the sales price is the pivotal variable that shapes market dynamics. If producers have low bargaining power and intermediaries exert significant control, the economic contribution potential may be constrained. Supporting this finding, Ayhan and Erkan (2023) showed that the selling price of laurel is influenced by intermediaries in the marketing chain. Moreover, a one-way analysis of variance applied in their study indicated that the selling price can vary substantially depending on the intermediary and the producer's role in the production process.

The method of transporting harvested laurel significantly affects its economic contribution. Transportation costs are crucial for the overall economic viability of agricultural and forestry operations. The choice of transport method, whether manual, vehicle, or animal, affects the cost structure, efficiency, and ultimately profitability. This is in line with the studies on the role of transport in agricultural and forestry economics. Belcher and Schreckenberg (2007) drew attention the importance of marketing channels and transport access in economic performance. Moreira *et al.* (2017) highlighted that transportation distance and mode can alter the expected profitability and risk profile of forestry operations. For instance, increased transportation distance negatively impacts profitability due to higher costs. Savić *et al.* (2020) reported that transport costs are a significant determinant of total operating costs in agricultural and forestry enterprises. Lovlev (2023) supports our study by noting that the economic efficiency of transport methods, such as manual or animal transport *versus* vehicles, can vary significantly. Vehicles, especially optimized for agricultural use, offer higher efficiency and lower unit costs compared to traditional methods. Schiess and Krogstad (2004) contributed to the technological and operational aspects of harvest transport. They underlined that while the mode of transport was crucial for economic outcomes, environmental impacts and sustainability should also be considered. Balancing economic efficiency and environmental sustainability is essential for optimizing transport methods for laurel and other forest products.

The employment situation in a region can have a significant impact on the economic contribution of the laurel harvest. Local labor markets, particularly employment rates and the availability of off-farm jobs, play a crucial role in determining the economic benefits derived from natural resources like laurel. According to Marchand and Weber (2018), local labor markets are directly influenced by the demand for labor in natural resource extraction. Consequently, increased demand for laurel can lead to increased employment and income in the region, thereby enhancing the economic contribution of the laurel harvest. In another study, Adam and Pretzsch (2010) underscored the contribution of local trade in laurel-like tree fruits in Sudan to employment and the local economy, providing substantial cash income and employment opportunities. Furthermore, Briones (2015) gave prominence to the role of laurel-like crops in rural economies as non-farm sources of income.

The location where harvested laurel is sold, such as cooperatives or factories, significantly impacts the economic contribution of the laurel harvest. Cooperatives have been shown to enhance the income potential of farmers involved in eco-industries, including non-timber forest products like laurel. This is because cooperatives improve market access, provide technical training, and offer better prices through collective bargaining. According to Ma *et al.* (2024), the cooperatives have been found to increase income generation for farmers in eco-industries by improving market access through better distribution of agroforestry materials and capacity, and by providing technical training. Shahini and Shahini (2024) further emphasized the contribution of cooperatives in their study, highlighting their role in socio-economic development by creating jobs, reducing

poverty, and improving predictable market access for the product industry. In another study, Ayhan and Erkan (2023) underscored the varying economic contributions of different sales channels for laurel. Inwood (1995) supports this by arguing that relying solely on factories for economic development can lead to oversimplified growth models that fail to fully exploit local resources.

The economic contribution of laurel harvesting is significantly impacted by the challenges faced during harvest time. These challenges encompass logistical difficulties, environmental factors, and market-related considerations, all of which can influence the profitability and sustainability of laurel production. In the same way, Asnan *et al.* (2024) highlighted the difficulties associated with palm oil production—that is, its dependence on foreign labor and the physically demanding nature of the work, which negatively affect productivity and economic returns. Another study by Argenta *et al.* (2024) explored the impact of timing and market conditions on apple harvest, demonstrating how these factors can influence profitability. Similarly, laurel production can also be affected by market conditions, including economic contribution, price fluctuations, and demand variability.

CONCLUSIONS

1. This study investigated the socio-economic factors influencing laurel (*Laurus nobilis* L.) harvesting in the Andırın district of Kahramanmaraş, Türkiye, and assessed the broader implications for rural livelihoods and sustainable resource management. The findings emphasize the significant role of NTFPs, such as laurel, in supporting rural economies, particularly in regions with limited access to formal employment and land-based livelihoods. For the inhabitants of Andırın, laurel harvesting is not merely a cultural tradition but also a substantial source of income, contributing to household food security and economic stability. In conclusion, the socio-economic factors influencing laurel harvesting in Andırın reveal an intricate interplay between economic necessities, cultural traditions, market structures, and environmental sustainability, thereby contributing significantly to SDG 15 (Life on Land). While laurel harvesting remains indispensable for rural livelihoods in the region, it is imperative to prioritize sustainable practices and implement effective policy measures to ensure this valuable resource continues to benefit local communities without compromising the ability of future generations to rely on it.
2. Improving access to markets and enhancing the value chain for laurel products would create opportunities for economic diversification and strengthen the resilience of rural households, thus contributing to SDG 12 (Responsible Consumption and Production). Additionally, local governments and non-governmental organizations (NGOs) could assume a pivotal role in fostering the establishment of cooperatives or associations that support laurel harvesters, providing both social and economic advantages. Policies promoting local producer autonomy in pricing decisions are particularly crucial, as this could mitigate existing market asymmetries and income inequalities.
3. Fostering collaboration among stakeholders, including local communities, forest authorities, NGOs, and private sector actors, can further promote balanced and sustainable utilization of laurel resources, aligning with global efforts toward

sustainable development and inclusive rural growth. In support of this, the results of the study show that the variables shaping the economic contribution of laurel production have a multidimensional structure. In particular, marketing, transport and governance structures were clearly identified as the main determinants of rural income strategies. Accordingly, it would be useful to structure rural development policies around these issues. While problems encountered during harvesting can have a negative impact on the economic contribution of laurel harvesting, there are opportunities for improvement. The use of better harvesting techniques, improved working conditions and better market access can alleviate some of these challenges. In addition, adopting sustainable practices and improving coordination between producers can increase the economic viability of laurel production.

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