



Ethnobotanical Knowledge and the Value Chain in the Mountainous Community of Guba

Farah Amrahova ✉ 

Institute of Botany, Ministry of Science and Education of the Republic of Azerbaijan, Baku, Azerbaijan

Abstract. For the Lezgin community living in Azerbaijan's Quba district, the gathering of wild plants not only represents a system of traditional ethnobotanical knowledge but also serves as a primary or supplementary source of livelihood for some households. However, the joint documentation of ethnobotanical knowledge and measures of economic value has not been sufficiently studied. The aim of this study is to document plant-gathering knowledge, the social division of labor in this activity, raw material sales models, and the contribution of the generated income to family livelihoods within the Lezgin community of Quba, based on the FAO/CIFOR value chain framework. The research was conducted in the form of semi-structured interviews in the villages of Küsnət, Küpçal, Qımılqışlaq, and Qəçrəş in the Quba district. Sixteen people participated in the interviews, including 7 women, 4 men, and 5 schoolchildren. As a result, 23 plant species belonging to 13 families were recorded. Surveys have revealed that the labor involved in plant gathering varies according to the zone. Thus, we noted that plants growing at high altitudes are gathered primarily by men, those in the middle and lower zones by women, and that children assist in both zones. The sale of the products is carried out primarily by men and children at the roadside, and by women at local markets. Although it was not possible to collect quantitative data on income due to the confidentiality of financial information, it was determined that the sale of seasonal wild plants serves as a primary source of livelihood for some households.

Keywords: *ethnobotanical knowledge, wild edible plants, value chain, Quba Lezgin community, diversification of livelihood strategies*

Received: 18.08.2026

Accepted: 20.09.2026

Published: 25.09.2026

<https://doi.org/10.54414/KLNT8031>

Copyright: © 2026 by the authors. Licensee: The Research Journal of Mountains: Biodiversity, Landscapes and Cultures, Western Caspian University, Baku, Azerbaijan. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution 4.0 International License (CC BY 4.0) (<https://creativecommons.org/licenses/by/4.0/>).

1. Introduction

Mountain and foothill ecosystems not only constitute a significant part of global biodiversity but also rank among the areas with the richest repositories of traditional ecological knowledge (Manzoor et al., 2023). Located on the southeastern slopes of the Greater Caucasus, the Quba district is one of Azerbaijan's administrative units distinguished by its ethnic diversity. Alongside Azerbaijanis, Lezgins, Tats, Mountain Jews, Khinalugs, Kryts, and other ethnic groups live in the district (Quba Rayon İcra Hakimiyyəti, n.d.). The rich system of traditional knowledge formed within a mountainous terrain is considered a treasure of local ethnic communities. Ethnic communities living in these areas, including the Lezgin community, have shaped their food, health, and livelihood strategies based on plant-related knowledge passed down from generation to generation (İbadullayeva & Şahmuradova, 2015).

The growth of wild edible and medicinal plants in the area under natural conditions is attributed to their rich content of microelements, organic acids, and vitamins (Casas et al., 2024). Wild forms, considered more beneficial than cultivated varieties, are also highly valuable as medicinal and functional foods (Casas et al., 2024; Qəhrəmanova & İbadullayeva, 2017; Turner, 2011). The economic significance of wild plant



resources—specifically how they are harvested and sold at the community level, and how the resulting income contributes to livelihoods—has yet to receive adequate research attention.

The value chain framework developed by FAO and CIFOR enables a systematic analysis of the journey of non-timber forest products (NTFPs) from raw material to market—covering the stages of harvesting, processing, transportation, and sales (Dong et al., nd). Combining this framework with traditional ethnobotanical methods (usage, harvesting knowledge, and plant identification) makes it possible to create a comprehensive picture at the community level that simultaneously reflects both cultural and economic dimensions

The aim of this study is to gather ethnobotanical knowledge regarding the gathering, use, and sale of wild plants among the Lezgin community in the villages of Küsnət, Küpçal, Qımılqışlaq, and Qəcrəş in the Quba district, and to assess the contribution of this knowledge to community livelihoods through the lens of the value chain. The community's recognition and use of wild flora, the division of labor regarding harvesting and sales within the community, and the impact of these activities on livelihood strategies constitute the primary focus of the research.

2. Materials and methods

2.1. Study area

The Lezgin community of the Quba district—located on the southeastern foothills of the Greater Caucasus and spanning an area that extends from the lower foothills to the mid-to-high mountain zones—was selected as the study area. The research was conducted from June 1 to 5, 2026, in the villages of Küsnət, Küpçal, Qımılqışlaq, and Qəcrəş, which are inhabited by the Lezgin community.

2.2. Inquiries and data collection

In the study, individuals possessing ethnobotanical knowledge were identified using purposive sampling, and data were collected through semi-structured interviews (Casas et al., 2024; Martin, 1995). Sixteen participants took part in the surveys. Among them were 7 women, 4 men, and 5 schoolchildren. School-aged children around 14 or 15 years old sell seasonal plants by the roadside. Interviews with students were conducted with the direct participation of their parents, ensuring both compliance with ethical requirements and the reliability of the collected data.

2.3. Plant material and taxonomic identification

Due to the fact that the survey period did not coincide with the harvesting season for certain species, plant material was not collected directly in the field; instead, dried specimens prepared and stored using traditional methods by the knowledge holders were utilized. Taxonomic identification at the species level was carried out jointly by the researcher and the scientific supervisor, and scientific names were verified against the World Flora Online (WFO) and Plants of the World Online (POWO) databases (WFO, 2026; POWO)

2.4. Analytical framework

The collected data were classified according to the FAO/CIFOR value chain methodology: (i) harvesting knowledge and division of labor, (ii) raw material sales model, and (iii) contribution of income to livelihoods. As one of the study's limitations, due to the sensitivity of financial information, precise quantitative income figures could not be collected; therefore, this measure relied on the participants' subjective quality assessments.



3. Results

Within the scope of the study, 23 wild plant species belonging to 13 families were recorded (Table 1). As shown in the table, the Rosaceae Juss. family predominated with 7 species. The families Apiaceae Lindl., Fagaceae Dumort, Lamiaceae Martinov, and Asteraceae Giseke were each represented by two species, while the other eight families were each represented by one species.

Table 1. Wild plant species, families, uses, sales forms, and elevation zones recorded in the study area.

№	Latin name	Family	Usage section	Sales form	Approximate elevation zone
1	<i>Fagus orientalis</i> Lipsky	Fagaceae Dumort.	Fruit	Dry	High (900–2000 m)
2	<i>Malus orientalis</i> Uglitzk.	Rosaceae Juss.	Fruit	Fresh/Dry	Middle (500–1500 m)
3	<i>Quercus iberica</i> Steven ex M.Bieb.	Fagaceae Dumort	Fruit, leaf	Dry	Lower-middle (400–1000 m)
4	<i>Pyrus caucasica</i> Fed.	Rosaceae Juss.	Fruit	Fresh/Dry	Orta (500–1500 m)
5	<i>Mespilus germanica</i> L.	Rosaceae Juss.	Meyvə	Fresh/Dry	Aşağı-orta (400–1000 m)
6	<i>Prunus divaricata</i> Ledeb.	Rosaceae Juss.	Fruit	Fresh/Dry	Aşağı-orta (400–1000 m)
7	<i>Rosa canina</i> L.	Rosaceae Juss.	Fruit	Dry	Geniş yayılmış (400–1800 m)
8	<i>Cornus mas</i> L.	Cornaceae Bercht.&J.Presl	Fruit	Fresh/Dry	Aşağı-orta (400–1000 m)
9	<i>Rubus idaeus</i> L.	Rosaceae Juss.	Fruit	Fresh/Dry	Orta-yüksək (800–1800 m)
10	<i>Crataegus orientalis</i> Pall.ex M.Bieb	Rosaceae Juss.	Fruit	Fresh/Dry	Orta (500–1500 m)
11	<i>Portulaca oleracea</i> L.	Portulacaceae Juss.	Leaf/stem	Fresh	Aşağı (0–600 m)
12	<i>Thymus kotschyanus</i> Boiss. & Hohen.	Lamiaceae Martinov.	Leaf/flower	Fresh/Dry	Aşağı-orta (300–1200 m)
13	<i>Hypericum perforatum</i> L.	Hypericaceae Juss.	Flower/stem	Dry	Aşağı-orta (300–1200 m)
14	<i>Falcaria vulgaris</i> Bernh.	Apiaceae Lindl.	Leaf/stem	Fresh	Aşağı (0–800 m)
15	<i>Mentha pulegium</i> L.	Lamiaceae Martinov	Leaf	Fresh/Dry	Aşağı (0–800 m)
16	<i>Achillea millefolium</i> L.	Asteraceae Giseke	Flower/leaf	Dry	Geniş yayılmış (300–1500 m)
17	<i>Matricaria chamomilla</i> L.	Asteraceae Giseke	Fower	Dry	Aşağı (0–600 m)
18	<i>Rumex acetosa</i> L.	Polygonaceae Juss.	Leaf	Fresh	Aşağı (0–800 m)
19	<i>Peganum harmala</i> L.	Nitrariaceae Lindl.	Seed	Dry	Aşağı, quraq (0–800 m)
20	<i>Bifora radians</i> M.Bieb.	Apiaceae Lindl.	Leaf/seed	Fresh	Aşağı-orta (0–1000 m)



21	<i>Stellaria media</i> (L.) Vill	<i>Caryophyllaceae</i> Juss.	Leaf/stem	Fresh	Aşağı (0–800 m)
22	<i>Urtica dioica</i> L.	<i>Urticaceae</i> Juss.	Leaf	Fresh/Dry	Geniş yayılmış (0–1500 m)
23	<i>Asparagus officinalis</i> L.	<i>Asparagaceae</i> Juss.	Young shoot	Fresh	Aşağı (0–600 m)

3.1. Social division of plant gathering

Plant gathering within the community varies according to both gender and topographical zone. Gathering activities in high-mountain zones (involving tree fruits and species characteristic of mid-to-high altitude zones) are primarily carried out by men, whereas in low-lying and foothill zones (involving herbaceous plants and wild vegetables), they are mainly performed by women (Elias, 2017). Children support their parents in both zones and also engage in selling seasonal produce by the roadside during school holidays.

3.2. Sales model

The sale of the gathered plants is carried out through two main channels. Roadside sales of seasonal and highly perishable produce are primarily conducted by children. Both fresh and dried product varieties are sold at local markets by all family members. The form of sale varies depending on how quickly the plant spoils. Plants such as **Portulaca oleracea* L.*, which do not dry well and whose leaves spoil quickly, are sold only in fresh or pickled form. Species of the genera **Thymus**, **Mentha**, and **Rumex** are sold both fresh and in dried form—intended for long-term storage—to meet market demand. Species such as **Prunus divaricata* Ledeb.* (Batsatsashvili et al., 2017). **Pyrus caucasica**, **Mespilus germanica* L.*, **Cornus mas* L.*, and **Rubus idaeus* L.* are sold fresh, dried, or pickled, as well as in the form of preserves, vinegar, compote, and the like.

Table 2. Key characteristics of the value chain for recorded wild plants.

Indicator	Result
Number of recorded species	23
Number of families	13
Assembly areas	Low, middle, and high mountainous areas
Collection groups	Men, women, and schoolchildren
Sales channels	Roadside sales and local market
Sales formats	Fresh, dried, and processed products
Economic significance	Additional or primary source of family income

3.3. Contribution of income to livelihood

Due to the sensitive nature of the financial information, the majority of survey participants refrained from sharing exact income figures. However, it is reported that the sale of seasonal wild plants is the primary



source of livelihood for a number of families (Angelsen et al., 2014). This indicates that the trade in wild plants plays an important role as a livelihood strategy for some households.

4. Discussion

The results of the study show that, within the Lezgin community of Quba, ethnobotanical knowledge constitutes not merely cultural heritage but also an active economic strategy. Gender distribution based on topographic zones—with men in higher zones and women in lower zones—reflects the community's socio-ecological organization adapted to the physical environment. The involvement of children in gathering and sales activities under parental supervision from an early age demonstrates a living mechanism for the transmission of ethnobotanical knowledge from generation to generation through practical experience (Faruk et al., 2024).

4.1. Potential for value chain expansion

Current research shows that the Lezgin community of Quba sells wild plants primarily in a raw or minimally processed form. This holds untapped potential in terms of value creation. Based on successful experiences in other mountainous regions, initiatives such as cosmetic products, functional beverages, fruit teas, homemade vinegar, and labels or souvenirs made from tree bark—produced without harming the living tree—can be recommended for community-level income diversification and small-scale social entrepreneurship (Dong et al., nd; Angelsen et al., 2014). These directions are presented as analytical recommendations based on existing value chain data, rather than being based on actual observations made in the current study.

5. Conclusion

This study evaluates traditional ethnobotanical knowledge regarding the use, collection, and sale of wild plants within the Lezgin community of the Quba district, based on the FAO/CIFOR value chain approach. As a result of the study, 23 wild plant species belonging to 13 families were recorded, and their forms of use, harvesting characteristics, sales channels, and role in family livelihoods were investigated.

The results obtained indicate that the gathering of wild plants within the community is organized in accordance with local conditions and the intra-family division of labor. Plants growing in high-mountain zones are primarily gathered by men, while those growing at low and medium altitudes are gathered by women. School-age children play an important role in the intergenerational transmission of traditional ethnobotanical knowledge by participating in both the harvesting and seasonal sales processes. The study also showed that for some households, the sale of wild plants is one of the important livelihood strategies. At the same time, the fact that products are primarily sold in raw or minimally processed form indicates that there is still untapped potential for creating added value. The results obtained can provide a scientific basis for developing future programs and projects aimed at the sustainable management of wild plant resources in mountainous areas, enhancing the socio-economic well-being of local communities, and preserving traditional ethnobotanical knowledge. It is considered advisable to conduct future studies that cover a broader geographical area and incorporate a quantitative assessment of economic indicators.

Author's contribution

The sole author is responsible for conceptualizing, collecting, and analyzing data, and writing and editing the manuscript.

Conflict of Interest

The authors declare no conflicts of interest.



Funding

This study did not receive specific funding from governmental, for-profit, or non-profit organizations.

References

1. Manzoor, M., Ahmad, M., Zafar, M., Gillani, S. W., Shaheen, H., Pieroni, A., ... & Khaydarov, K. (2023). The local medicinal plant knowledge in Kashmir Western Himalaya: a way to foster ecological transition via community-centred health-seeking strategies. *Journal of Ethnobiology and Ethnomedicine*, 19(1), 56.
<https://doi.org/10.1186/s13002-023-00631-2>
2. Quba Rayon İcra Hakimiyyəti. *Əhalisi*.
<https://quba-ih.gov.az/az/ehalisi.html>
3. İbadullayeva, S. C., & Şahmuradova, M. C. (2015). *Azərbaycanda etnobotaniki araşdırmalar: Göygöl rayonu*. Elm və Təhsil.
4. Casas, M., Vallès, J., & Gras, A. (2024). Nutritional properties of wild edible plants with traditional use in the Catalan linguistic area: A first step for their relevance in food security. *Foods*, 13(17), 2785.
<https://doi.org/10.3390/foods13172785>
5. Qəhrəmanova, M. C., & İbadullayeva, S. C. (2017). *Bitkilərin sirli dünyası (Ot bitkiləri)*. Elm və Təhsil.
6. Dong, M., Marco, S., He, J., & Luo, L. (n.d.). *Assessment of economic value of non-timber forest products through commodity chain approach*. CIFOR-ICRAF.
7. Faruk, A., Nersesyan, A., Papikyan, A., Galstyan, S., Hakobyan, E., Barblishvili, T., ... & Breman, E. (2024). Multigenerational differences in harvesting and use of wild edible fruits and nuts in the South Caucasus. *Plants, People, Planet*, 6(1), 238-248.
<https://doi.org/10.1002/ppp3.10434>
8. Batsatsashvili, K., Mehdiyeva, N., Fayvush, G., Kikvidze, Z., Khutsishvili, M., Maisaia, I., ... & Bussmann, R. W. (2017). *Prunus divaricata* Ledeb. *Ethnobotany of the Caucasus*, Springer International Publishing, Cham.
https://doi.org/10.1007/978-3-319-49412-8_75
9. Angelsen, A., Jagger, P., Babigumira, R., Belcher, B., Hogarth, N. J., Bauch, S., ... & Wunder, S. (2014). Environmental income and rural livelihoods: a global-comparative analysis. *World development*, 64, S12-S28.
<https://doi.org/10.1016/j.worlddev.2014.03.006>
10. Turner, N. J., Łuczaj, Ł. J., Migliorini, P., Pieroni, A., Dreon, A. L., Sacchetti, L. E., & Paoletti, M. G. (2011). Edible and tended wild plants, traditional ecological knowledge and agroecology. *Critical Reviews in Plant Sciences*, 30(1-2), 198-225.
<https://doi.org/10.1080/07352689.2011.554492>
11. World Flora Online (WFO). (2026). *World Flora Online*.
<http://www.worldfloraonline.org>
12. Kew Science. *Plants of the World Online (POWO)*. Royal Botanic Gardens, Kew.
<https://powo.science.kew.org>
13. Elias, M. (2017). Gender bias affects forests worldwide. *Ethnobiology Letters*, 8(1), 8–11.
14. Martin, G. J. (1995). *Ethnobotany: A 'methods' manual*. Chapman & Hall.
<https://doi.org/10.5860/choice.33-0313>