Wild edible plant species used in the Ağrı province, eastern Turkey

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Abstract. Wild edible plant species found in Ağrı are nutritionally and economically relevant. Plants are collected by the villagers and brought to the market for sale in the spring. Interest in these plants responds to the increasing demand for organic and natural food. In this study, 350 in-depth face-to-face interviews with villagers about the edible plants used in Ağrı (7 districts, 35 villages) were conducted in the region from April 2016 to October 2017. The species, parts used and their consumption and preservation techniques were analyzed and documented. Some of the wild edible plant species are consumed cured or canned, raw or cooked, dried, and some are frozen. The collected 100 wild edible species belong to 25 different plant families. Species are consumed as vegetables (91), spices (19), beverages (16), subterranean parts (5), fruits (3), seeds (3) and exudates (2). The most important species according to their cultural importance were: *Amaranthus retroflexus*, *Beta trigyna*, *Gundelia tournefortii*, *Mentha longifolia*, *Polygonum persicaria*, *Rumex scutatus*, *Tragopogon porrifolius* subsp. *longirostris*, and *Urtica dioica*. Leaves and young shoots were the most frequently used parts. Our study shows that wild edible plants are still well known and used by the local people of Ağrı as a food source. The documented data on these plants herein could be used as baseline information for further investigations on nutritional contents, as they could have the potential to become valuable nutrition sources.

Keywords. Ethnobotany, local names, modes of use, vegetables, wild plants.

Resumen. Las plantas silvestres comestibles que se encuentran alrededor de Ağrı siguen siendo importantes para la alimentación y la economía local. Estas plantas son recolectadas por la población local y vendidas en el mercado en primavera. El interés por las plantas silvestres comestibles ha aumentado debido a la creciente demanda de alimentos orgánicos y naturales. En este estudio se realizaron 350 entrevistas cara a cara entre abril de 2016 y octubre de 2017 a habitantes de la región de Ağrı (7 distritos, 35 pueblos). Se analizaron y documentaron las especies empleadas, las partes comestibles y sus modos de preparación, conservación y consumo. La mayoría se consumen, pero también se toman crudas. También se procesan en forma de conservas, se secan o se congelan. Las 100 especies registradas pertenecen a 25 familias y se usan como verduras (91), condimentos (19), bebidas (16), órganos subterráneos (5), frutos (3), semillas (3) y exudados (2). Según su importancia cultural, las plantas más importantes son: *Amaranthus retroflexus*, *Beta trigyna*, *Gundelia tournefortii*, *Mentha longifolia*, *Polygonum persicaria*, *Rumex scutatus*, *Tragopogon porrifolius* subsp. *longirostris*, y *Urtica dioica*. Las hojas y brotes jóvenes son las partes más utilizadas. Estos resultados muestran que las plantas silvestres comestibles todavía son muy conocidas y utilizadas por la población local de Ağrı como fuente de alimento. Además, los datos recopilados sobre estas plantas podrían usarse para futuras investigaciones sobre sus contenidos nutricionales, ya que tienen el potencial de convertirse en valiosas fuentes de nutrientes.

Palabras clave. Etnobotánica, modos de uso, nombres locales, plantas silvestres, verduras.

INTRODUCTION

Edible plants that are gathered in the wild to be consumed as a drink or food have been an integral part of millions of people in rural and even urban regions in many developed countries around the world (Block 1991; Heinrich & al. 2006; Leonti & al. 2006; Behre 2008; Łukasz 2013; Reyes-Garcia & al. 2015), suggesting that the effects of wild edible plant resources on peoples’ health are still little known and that their consumption and gathering have been reduced both in diversity of species and quantity (Millennium Ecosystem Assessment 2005; Tardio & al. 2006; Łukasz 2013; Reyes-Garcia & al. 2015; Bharucha & Pretty 2010; Pardo-de-Santayana & al. 2007). This decrease in wild plants use is related to urbanization and associated rural migration, modernization of lifestyles, industrialization of food production, and extinction of natural plant habitats, among others (Pardo-de-Santayana & al. 2005; Turner & Turner 2008; Bharucha & Pretty 2010; Kalle & Soukand 2013; Łukasz & al. 2013; Abbet & al. 2014; Reyes-Garcia & al. 2015).

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Ethnobotanical studies on European wild edible plants have been mainly conducted in the Mediterranean region (Ertuğ 2004; Tardio & al. 2006; Rivera & al. 2007; Pieroni & al. 2008; Blanco-Salas & al. 2019). All these investigations clearly indicate that wild leafy vegetables or wild culinary herbs still represent a relevant part of the local or territorial Mediterranean diet in rural areas. Furthermore, their nutritional constituents have been studied in numerous publications showing relevant human health benefits (Guil Guerrero & al. 1998; Trichopoulou & al. 2000; Couladis & al. 2003; Pieroni & al. 2002; Tarwadi & Agte 2003; Zeghichi & al. 2003).

However, deep changes in feeding habits of people living in the Mediterranean rural areas have occurred and many local or traditional dietary models have already been forgotten, especially in situations where environmental and cultural transformations have led to changes in local diets (Tumino & al. 2002), and thus local people have lost their plant knowledge over time. Therefore, studies on traditional food culture should be urgently implemented. This goes particularly for those regions in countries like Turkey, where, for historical and geographical reasons, have remained relatively isolated and local food uses are still alive but at risk of disappearing (Kadıoğlu & al. 2020).

Turkey, at the crossroads between Europe and Asia, has a very rich flora in terms of wild foods and several ethnobotanical studies have been conducted in various regions (e.g., Özgökçe & Özcėlik 2004; Simsek & al. 2004; Kargıoğlu & al. 2008; Öztürk & Dİnç 2005; Satılı & al. 2008; Ezer & Arısan 2006; Çakılcıoğlu & Türkoğlu 2010). However, in Ağrı province (eastern Turkey) only one ethnobotanical work has been carried out in limited areas and there is a need now to update this information (Gümüş 1994). Therefore, the aim of this paper is to compile the ethnobotanical information about the gathering and consumption of wild edible plant species in the Ağrı province (Turkey) and provide a picture of their current knowledge and utilization.

**MATERIALS AND METHODS**

**The study area**

The findings for edible wild plants were collected in the eight districts of the Ağrı province, namely, Diyarı, Doğubayazıt, Eleskirt, Hamur, Patnos, Taşlıçay and Tutak (Fig. 1), a region with an old traditional background in the consumption of these plant species. The Ağrı province is situated in eastern Anatolia Region of Turkey between the latitudes 38°59'–40°02'N and longitudes 42°15'–44°36'E. It covers a total land area of 11,520 km² with a human population estimated at about 540,000. The climate in central districts is generally continental. According to the data from meteorological stations (Ağrı, Doğubayazıt and Patnos), which perform long term observations in Ağrı (1960–2012), the annual average temperatures of the province vary between 6.2°C and 9.2°C. The temperature in Ağrı may rise to 39.9°C in August and go down to -45.6°C in January. The number of frosty days is 160.7 days, and mean annual rainfall is 521.8 mm/yr.

One village of each district was selected for an exhaustive biodiversity inventory based on their altitude and vegetation cover (Fig. 1). The spatial extent of the villages is highly variable and so the villages were determined with help of Development Agents and agricultural specialists in study areas. In each village, we started by inventorying these plant species. Five different villages in each district of the study area were visited for the ethnobotanical interviews (for all 7 districts = in total 35 villages or small towns).

The study was carried out between 2014 and 2015 (from April to October). We carried out fieldwork to elaborate the inventory about wild edible plants, and also interviewed native elders who were familiar with these plants. Data were collected through open in-depth interviews with local elders (Martin 2014). Elderly and experienced people who lived in this region for many years and who knew the plants very well were favoured. Older women were preferred since they are more knowledgeable about edible wild plants than men. Ten informants were interviewed in each village and therefore 350 informants (7*5*10 = 350) were recruited (290 female, 60 male; average age 65).

We asked native elders to list all the wild food plants of the region and, for each wild edible plant species listed, to indicate all relevant knowledge about its consumption and gathering: present and past use, processing techniques and mode of consumption. Knowledge regarding wild edible plants was categorized according to Kadıoğlu & al. (2016): Turkish vernacular name, part of the plant used (whole plant, leaf, stem, shoot, root, tuber, exudates, flower, seed and fruit), traditional preparation for consumption and consumption time. Wild food plant uses were organized under seven food use-categories: vegetables (including the subcategories cooked, raw, and pickles), spices, beverages, seeds, fruits, exudates and subterranean parts.

The identifications of the reported wild edible plants are based on Davis & al. (1988) and Davis (1965–1985). Identifications were made by the Prof. Dr. Ali Kandemir. Two specimens of each wild edible plant species accompanied by detailed information on the collection locality, the characteristics of the plant, vernacular names, native culinary uses, and wild edible plants meanings were deposited in the herbarium of the Turkey Seed Gene Bank (Ankara) center and the Erzincan Horticultural Research Institute.

**Data Analysis**

The Cultural Importance (CI) index (Tardio & Pardo-de-Santayana 2008) was used to express the importance of the studied species:

$$UV_i = \sum UR/N$$

where N is the total number of informants interviewed in the survey (350) and UR is the number of informants that mention each use-category for the species. For example, in
the case of *Anthriscus sylvestris* (L.) Hoffm., 31 informants mentioned its use as a cooked vegetable, 48 as a raw vegetable, 61 as pickles, 14 as spice. Therefore, $CI = (31+48+61+14)/350 = 0.44$.

We also calculated the total CI of each use-category, adding the CI of all the species included in each category and the average CI of the category dividing the total CI of the category between the number of species reported for the category. For example, there are three species in the use-category seeds (*Cephalaria syriaca* (L.) Schrad., *Gundelia tournefortii* L., and *Vicia cracca* L.). As these uses were mentioned by 46, 35 and nine people, respectively, their CI as seed was 0.13, 0.10 and 0.03. The total CI of seeds was 0.26, the result of adding 0.13, 0.10 and 0.03 and the average CI of seeds was 0.09, 0.26 divided by three, i.e. the number of species of the use-category seeds.

**RESULTS AND DISCUSSION**

The ethnobotanical survey showed a great diversity of plant species used as wild foods in Ağrı. A total of 100 wild plant species and 25 families were documented and inventoried (Appendix 1). Among the 25 families, the four most important were Asteraceae (17 species), Lamiaceae (14 species), Apiaceae (12 species), and Polygonaceae (10 species). The remaining 21 families have from four (Brassicaceae, Amaranthaceae) to one species (Araceae, *Arum rupicola* Boiss; Caprifoliaceae, *Cephalaria syriaca*; Caryophyllaceae, *Silene vulgaris* (Moench) Garcker var. vulgaris; Hypericaceae, *Hypericum perfoliatum* L.; Malvaceae, *Malva neglecta* Wallr.; Primulaceae, *Primula auriculata* Lam.; Urticaceae, *Urtica dioica* L.; and Xanthorrhoeaceae, *Eremurus spectabilis* M.Bieb., respectively) (Figure 2).

Based on the CI, the most important species were (ordered by CI): *Amaranthus retroflexus* L. (0.98), *Tragopogon porrifolius* subsp. longirostris (Sch.Bip.) Greuter (0.98), *Urtica dioica* (0.98), *Beta trigyna* Walds. & Kit. (0.97), *Gundelia tournefortii* L. (0.97), *Mentha longifolia* L. (0.97), *Polygonum persicaria* L. (0.97), *Rumex scutatus* L. (0.97), *Anchusa leptophylla* Roemer & Schultes (0.94), *Caltha palustris* L. (0.93), *Capsella bursa-pastoris* L. (0.93), *Silene vulgaris* var. vulgaris (0.93), *Rumex crispus*
L. (0.92), Malva neglecta Wallr. (0.91), Nonea melanocarpa Boiss. (0.91), Rumex patientia L. (0.91), Thymus kotschyanus Boiss. & Hohen. (0.90). All are vegetables, and most of them are eaten cooked. These data show that there is still a considerable number of species that are widely known, since most of them were cited by more than 90% of the people interviewed (Appendix 1).

Allium kharputense Freyn & Sint., Alyssum peltarioides Boiss., Caltha palustris L., Ferula orientalis L., Rumex patientia, Scorzonera mollis M.Bieb. subsp. szowitzii (DC) D.F.Chamb., and Stachys lavandulifolia Vahl, are some of the local wild edible plants used daily in the Ağrı region. They are loved as food and have not undergone any changes over the past decade (Appendix 1).

These species are gathered for self-consumption or are sold in local markets of the area. Some of these species are suffering overexploitation, so they are in danger of extinction due to unconscious or incorrect collecting techniques such as uprooting: Arum rupicola Boiss., Crocus biflorus subsp. tauri (Maw) B.Mathew, Rheum ribes L.

The vast majority of wild edible plants mentioned are frequently used as food in Turkey and other regions east of Turkey. However, several wild edible plants are only utilized in small areas of Turkey (e.g., Amaranthus retroflexus, Chenopodium album subsp. album, Eremurus spectabilis, Gundelia tournefortii, Malva neglecta, Mentha longifolia, Polygonum sibiricum Meissn., Portulaca oleracea, Rheum ribes, Rumex crispus, Rumex scutatus, Scorzonera cana (C.A Meyer) Griseb. var. jacquiniana (W.Koch) Chamberlain, Tragopogon dubius Scop., and Urtica dioica (Çakilcioglu & Turkoglu 2010; Özgen & al. 2004; Ugulu & al. 2009; Ezer & Arısan 2006; Kirbağ & Zengin 2006; Akan & al. 2008; Ari & al. 2015).

The use-category that included most plants was vegetables (91 taxa), followed by spices (19), beverages (16), subterranean parts (5), fruits (3), seeds (3), and exudates (2). The highest CI was for vegetables (total 42.84; cooked 28.3, raw 11.65, pickles 2.89), followed by spices (5.38), beverages (2.21), fruits (1.52), subterranean parts (1.46), exudates (0.32) and seeds (0.26). However, the highest average CI was for fruits (0.51), followed by cooked vegetables (0.46), raw vegetables (0.24), spices (0.38) and subterranean parts (0.29) (Table 1).

**Vegetables**

The most diverse use-category, with 91 species, was clearly vegetables. The high global CI of the category (42.84) and its high average (0.47) indicate that they are also the most widely used. As in previous studies, our results confirm the high diversity and intensive use of wild vegetables in east Turkey (Özgen & Kaya 2004; Özgökçe & Özçelik 2004; Kirbağ & Zengin 2006; Akan & al. 2008; Çakilcioglu & Turkoglu 2010; Çakilcioglu & al. 2010; Kadioglu & al. 2016, 2020).

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**Table 1.** Number of wild edible plant species and cultural importance of the use-categories and subcategories in the Ağrı province, Turkey.

| Use-category/subcategory | Number of species | Cultural Importance (CI total/average CI) |
|--------------------------|-------------------|------------------------------------------|
| Vegetables (VEG)         | 91                | 42.84/0.47                               |
| Cooked (VEG)             | 61                | 28.3/0.46                                |
| Raw (VEG)                | 48                | 11.65/0.24                               |
| Pickles (VEG)            | 9                 | 2.89/0.32                                |
| Spices (SPI)             | 19                | 5.38/0.38                                |
| Beverage (BEV)           | 16                | 2.21/0.14                                |
| Subterranean parts (SUB) | 5                 | 1.46/0.29                                |
| Fruits (FRU)             | 3                 | 1.52/0.51                                |
| Seeds (SEE)              | 3                 | 0.26/0.09                                |
| Exudates (EXU)           | 2                 | 0.32/0.16                                |

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**Fig. 2.** Number of wild edible plants surveyed in the Ağrı province, distributed across plant families.
Many of these vegetables are rich in valuable nutrients. For instance, *Malva neglecta*, eaten cooked or raw, is rich in vitamins A, B, and C (Yeşil & al. 2019). It has substantial local value as a vegetable (CI cooked: 0.8 and CI raw 0.11) both in bordering countries and Turkey (Yeşil & Akalın 2010; Pieroni & al. 2017; Yeşil & al. 2019). As in the other parts of Turkey and in bordering countries, roots, young stems and petioles of *Gundelia tournefortii*, a good source of vitamins A, C and E are consumed cooked or raw in the study region (Şimşek & al. 2004; Yeşil & Akalın 2010; Karaaslan & al. 2014; Ahmad & al. 2015; Pieroni & al. 2017; Yeşil & al. 2019).

Most species are gathered in spring (mainly May and June), although there are also species that can be gathered earlier (e.g., *Crocus biflorus* subsp. *tauri* young leaves are consumed in March and April), later (e.g., *Rumex ribes* flower stems are eaten in July) or even all year round (e.g., *Stachys lavandulifolia* Vahl., *Ziziphora clinopodioides* Lam.). The plant parts most commonly used are young leaves and shoots. They are usually eaten fresh, mainly cooked (61 species), or raw (48). Besides nine species are preserved in pickles. The use-category cooked vegetables is clearly the most important (total CI 28.3, average CI 0.46). For instance, five of the species with the highest CI values are only consumed cooked (i.e., *Amaranthus retroflexus*, *Beta trigyna* Walds. & Kit., *Polygonum persicaria*, *Tragopogon porrifolius* subsp. *longirostris* (Sch. Bip.) Greuter). The tops of the shoots, leaves and shoots are eaten cooked, stirred with olive oil and fried in oil with chili or garlic and different spices mixed with other wild vegetables.

An interesting group of cooked vegetables are those used to prepare *dolma*, an important component of Turkish cuisine inherited from the Ottomans. *Dolma* consists of stuffed vegetables like eggplant or stuffed peppers. They are usually stuffed with rice, meat and bulgur (chopped wheat). Big leaves of *Heracleum trachylymon* Fisch. & C. Mey, *Plantago major* L., several *Rumex* species (*R. alpinus* L., *R. crispus* L., *R. obtusifolius* L. subsp. *subalpinus* (Schur) Celak., *R. patientia*), and *Salvia verticillata* L. subsp. *verticillata* are also used for wrapping *dolma*. Besides, young leaves of *Eremurus spectabilis* are used in stews that are added to the filling of *dolma*.

There are also species that are both eaten cooked and raw (e.g., * Scorzonera mollis* subsp. *szowitzii*, *Tragopogon aureus* Boiss.). Besides a very important number of species are only eaten raw, being *Rumex scutatus* the species with highest CI (0.97). Some of them are brought home to prepare salads (e.g., *Portulaca oleracea* L., *Rumex scutatus*, *Teucrium chamaedryis* L.) and others are consumed without any preparation. For instance, the fresh leaves of *Allium kharputense* Freyn & Sint., *Allium gramineum* K.Koch (Körmern, Sir, Sirim), *Arctium tomentosum* Mill., *Caltha palustris*, *Plantago major*, *Rumex crispus*, *Rumex obtusifolius* subsp. *subalpinus*, *Rumex patientia*, and *Xanthogalum purpurascens* Lalllem. are consumed raw at home. On the other hand, the fresh leaves and fresh shoots of other species are consumed raw in the field (e.g., *Allium atrovialuceum* Boiss., *Anthriscus nemorosa* (M.Bieb) Spreng., *Carduus nutans* L., *Heracleum trachylymon*, *Hylotelephium telephium* (L.) H.Öhba, *Onopordum acanthium* L., *Rheum ribes*, *Scorzonera cana* (C.A.Meyer) Griseb. var. *jacquiniana* (W.Koch) D.F.Chamb., *Scorzonera mollis* subsp. *szowitzii*, *Sempervivum minus* Turr. ex Wale., *Tragopogon aureus*, and *Tragopogon dubius* Scop.).

Besides leaves and young shoots, flowers are also consumed. This is the case of the young flowers of *Iris persica*, that are valued for their mild taste. Interestingly, they are known as the heralds of the arrival of spring (Yeşil & al. 2019). Other interesting species is *Echinops pungens* Trautv. which immature receptacle of the inflorescences are consumed in a similar way as the heart of the artichokes.

The other important category of vegetables are those used to elaborate pickles. While only nine species are used, its average CI is high (0.32). Their shoots are placed in a sterilized jar along with salt, as well as spices, and are then allowed to mature until the desired taste is obtained. In general, tarterness has a very important place in making pickles for people in the region, as the tart taste of these plants is perceived as a special flavor in the sense of “a different taste” and “good for the food”. For instance, * Ferula orientalis* L. and *Prangos platyclaena* Boiss. are especially valuable for the inhabitants of the Ağrı region and their taste is described as “tart or sour” (*Heliz or Çakşur* in Ağrı). While *Ferula orientalis* (0.75) and *Prangos platyclaena* (0.78) are culturally important species in the study region, their usage is not very common in other areas of Turkey (Kadioğlu & al. 2016, 2020).

Taste has an important place in the selection of wild edibles for local communities and people pay attention to collect tart/sour wild edible plant species to obtain a balanced taste of the meals. On the other hand, the taste of plants or foods is often an important criterion for categorizing, characterizing and detecting food plants (Johns 1986; Nebel 2004; Yeşil & Akalın 2010; Karaaslan & al. 2014; Ahmad & al. 2015; Pieroni & al. 2017; Yeşil & al. 2019).

Spices

Plants used for seasoning food are also commonly used. Nineteen species with a total CI of 5.38 and an average CI of 0.28 were reported, being *Mentha longifolia* L. (CI = 0.89), *Thymus sylpyleus* Boiss. (0.63) and *Ziziphora clinopodioides* Lam. (0.58) the species with highest CI. These species are used freshly in salads called Turkish Shepherd’s Salad, *Rezepete, Mamzana*. Additionally, dried parts of them are cooked and consumed in yogurt soups such as Turkish Yogurt Soup. Many of these plants are members of the Lamiaceae family and are also consumed raw and to prepare herbal teas (e.g., *Nepeta italica* L., *Satureja hortensis* L.). An interesting group of six species are used to flavor cheese, mainly *Allium* species and several Apiaceae (e.g., *Anthriscus sylvestris*, *Chaerophyllum bulbosum* L.).
Beverages

In the studied region, 16 taxa were used for preparing herbal teas, being Alyssum peltaroides Boiss the most cited species (0.49). All their parts are consumed as a tea, but also as salad and spice. Another widely consumed beverage is the sherbet (diluted syrups produced with the addition of sugar) made from the flowers of Papaver argemone L. (0.3). Young shoots and leaves of Hypericum perforatum L. (0.23), Mentha longifolia L. (0.06), Nepeta racemosa Lam. (0.03), Nepeta italica L. (0.07), Rosa pimpinellifolia L. (0.18), Salvia multicaulis Vahl. (0.03), Satureja hortensis L. (0.28), Stachys lavandulifolia Vahl. (0.04), Thymus kotschyanus (0.07), Thymus pubescens Boiss. & Kotschy ex Celak. (0.11), Thymus sipyleus (0.06), and Ziziphora clinopodioides Lam. (0.03) are also used as herbal teas as in other Turkish regions (Özgen & Kaya 2004; Özugkçe & Özçelik 2004; Kirbağ & Zengin 2006; Akan & al. 2008; Kadioglu & al. 2016, 2020). Another interesting common beverage in Ağrı, also previously cited, is the herbal tea prepared with flowers of Iris persica (0.06) (Akgül & al. 2018).

Subterranean parts

Roots and tubers from five species are eaten in the region, being Arctium tomentosum the most cited (0.66). Its root collar is peeled and consumed raw. The roots of two thistles (Cirsium rhizocephalum C.A Mey., 0.26; Onopordum acanthium, 0.21) are consumed after cooking and the roots of Lathyrus tuberosus L. (0.06) and the corms (bulbiferous tubers) of Crocus biflorus subsp. tauri (0.27) raw.

Fruits

The fruits of three taxa, including Lathyrus tuberosus L. (0.27), Rosa pimpinellifolia L. (0.37), and Rubus idaeus L. (0.87) are consumed raw. The fruits of Rosa pimpinellifolia are especially known for their effectiveness in colds and for strengthening the body’s defenses against infection (Baytop 1999). Furthermore, fruits of Rosa pimpinellifolia are rich in minerals (C, P, A), vitamins (B1, B2, E, K), organic acids, sugar, tannins, pectin, essential oils (Demir & Özcan 2001; Mehmet & al. 2018). In addition, Rubus idaeus L. fruits are used to elaborate jams and the leaves of Rosa pimpinellifolia are dried and used to prepare a drink.

Seeds

The use-category seeds includes three species. From our knowledge, Cephalaria syriaca (0.1) has been recorded as edible in the present study for the first time. The seeds are ground and used for making bread mixed with wheat flour. Gundelia tournefortii seeds (0.13) are cooked and consumed as grain/kernel substitutes. The seeds of the plant are dried with a paper towel and placed in a bowl. Then olive oil and salt are added. It is spread on a baking sheet and baked for 5–10 minutes until browned and crispy. Given their lipid content they have been studied as a source of edible oil (Khanzadeh & al. 2012). Finally, Vicia cracca raw seeds are eaten as in southeastern Turkey (Yeşil & al. 2019).

Exudates

In the study area, the latex of Gundelia tournefortii (0.25) roots and Scorzonera latifolia (Fisch. & C. A. Mey.) DC. (0.07) shoots are used to prepare chewing gum. These findings are similar to our previous results (Kadioglu & al. 2016, 2020).

Plant names

A very rich number of plant names was obtained. Local phytonyme of wild edibles consisted in 157 local names, 145 simple (e.g., sogutu, kuskekme) and 12 complex names (e.g., yabani sakiz, yer citegi) (Appendix 1). The average number of names by species was 2.13, having most species one, two or three names (25, 29 and 25 species respectively). Generic names that are used for several species were also common. For instance kimi and mendek were applied to three different morphologically similar Apiaceae species (Anthriscus sylvestris, Chaerophyllum bulbosum, Ch. crinitum Boiss.), and kekik to four Lamiaceae species (Thymus kotschyanus, Thymus pubescens, Thymus sipyleus, Ziziphora clinopodioides).

The language of the vast majority of the wild edible plant species names recorded is Turkish (e.g., evelik, Rumex crispus, Rumex patientia; tirso, Rumex scutatus, Rumex tuberosus subsp. horizontalis; isgin, Rheum ribes; isrgan, Urtica dioica L.; ciris, Eremurus spectabilis M. Bieb.). Kurdish is also spoken in the area and four Kurdish names were mentioned: tirso, Rumex crispus, Rumex patientia, Rumex scutatus, Rumex tuberosus subsp. horizontalis; silgok, Beta trigyna, Beta lomatogona Fisch. & C.A. Mey.; sirim, Allium sp., Allium atrovialuceum, Allium gramineum; silmask, Chenopodium album subsp. album).

The wild edible plant species utilized in Ağrı are called by the same or very similar local names in different regions of Anatolia (e.g., Mentha longifolia, yarpuz; Gundelia tournefortii, kenger, Malva neglecta, eбегuemeci; Polygonum cognatum, madmak; Rheum ribes, isкин; Urtica dioica, isrgan; Rumex scutatus, ek scrimmage; Rumex crispus L., evelik; Eryngium billardierei F.Delaroche, boğa diкeni) (Yücel & Tüלükoğlu 2000; Sarper & al. 2009; Arı & al. 2015; Çakılcıoglu & Turkoglu 2016). This similarity reflects a wide sharing of ethnobotanical knowledge in the region.

There are also plants whose local names in Ağrı are different from other areas of Turkey (e.g., Silene vulgaris var. vulgaris, civrincik, gelin parmağı; Capsella bursa-pastorii, çoban çantası; Ononis spinosa L., kayışкiran; Salvia multicaulis, adaçaylı; Teucrium chamaedrys, mayaslotu; Teucrium polium L., ыlper yavşanı, acı ot; Papaver rоhes L., gelincik; Rumex scutatus, kuzukulağı; Portulaca oleracea, semizotu, temizlik out; Chenopodium album subsp. album, sari sirken; Beta trigyna, kir ispanja; Rumex patientia, ilibada; Polygonum

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cognatum, çoban ekmeği; Urtica dioica, gezgezik; Echium vulgare L., sormuk) (Çakılcıoğlu & Turkoğlu 2010; Arı & al. 2015). This situation could be due to the changing demographics of the young population or domestic people, i.e. residents who migrated to different provinces were replaced by migrants from different cities of Turkey. Hence, the regional people pattern changed progressively and finally such a situation modified the regional population culture.

Additionally, because villagers in the local community are usually migrating to large cities or towns and benefiting from the facilities of modern agriculture or different food products, the heritage of traditional wild edible plant species information is decreasing dramatically. Moreover, the younger generation in the local community tends to migrate to large cities in an effort to earn more money and find steady jobs. Consequently, villages in the region are rapidly emptying of their new generations or young population and such a situation raises the danger of losing regional knowledge about wild edible plant species.

The results of our work indicate a very rich ethnobotanical knowledge about wild edible plant species in rural areas of Ağrı. It is vital to document local usages as food through further studies before it is too late. Some of the wild edible plant species of Ağrı are endangered by over grazing, use of chemical herbicides in farming, inattentive picking of edible wild plant species to generate revenue, and expansion of new agricultural lands. Given the nutritional interest of many of these species, the documented data could be used as baseline information for further investigations on nutritional contents, as they could have the potential to become valuable nutritional sources for people. These uses could help to promote the sustainable development of the area, once inappropriate gathering techniques are excluded.

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### APPENDIX 1

Selected attributes of the surveyed wild edible plants used in the Ağrı province, Turkey. BEV: beverage, EXU: exudates, PIC: pickles, SEE: seeds, SPI: spices, SUB: subterranean parts, VEGc: cooked, VEGp: pickled, VEGr: raw; dolma: stuffed leaves or vegetables; şerbet: a diluted form of mixed syrups produced with the addition of sugar.

| Species | Turkish common name | Used parts | Preparation | Consum. time | CI | Voucher |
|-----------------|---------------------|------------|-------------|--------------|----|---------|
| AMaranthaceae | *Amaranthus retroflexus* L. | Bostanpancarı, bozoğlan | Young leaves and shoots | Dishes | May-Jul | 0.98 (VEGc) | 04-2 |
| *Beta lomatogona* Fisch. & C.A. Mey. | Silgok, pazi pancarı | Young leaves and shoots | Dishes | May-Jun | 0.89 (VEGc) | 25-01 |
| *Beta trigyna* Walds. & Kit. | Silgok, pancar, pazi pancarı, silk | Young leaves and shoots | Dishes | May-Jun | 0.97 (VEGc) | 04-1 |
| *Chenopodium album* L. subsp. *album* | Silmask, unluca | Young leaves and shoots | Dishes | May-Jun | 0.86 (VEGc) | 04-3 |
| *Chenopodium folliculosum* Asch. | Kızılpancar | Young leaves and shoots | Dishes | May-Jun | 0.21 (VEGc) | 04-4 |
| AMaryllidaceae | *Allium atroviolaceum* Boiss. | Sirim | Leaves, bulbs | Dishes | May | 0.49 (VEGc) | 04-8 |
| *Allium gramineum* K. Koch | Körmen, sir, sirim | Young leaves | Raw, cheese flavoring | May-Jul | 0.36 (VEGr: 0.29; SPI: 0.07) | 04-5 |
| *Allium kharputense* Freyn & Sint. | Suğuryos, camışkıran | Leaves | Dishes | May-Jun | 0.18 (VEGr) | 04-6 |
| *Allium sp.* | Sirim, itsoğanı | Leaves, bulbs | Raw, cheese flavoring | May | 0.21 (VEGc: 0.15; SPI: 0.06) | 04-7 |
| APIaceae | *Anthriscus nemorosa* (M. Bieb) Spreng. | Kımı, mendek | Young leaves and shoots | Dishes, pickles, raw, cheese flavoring | May-Jun | 0.25 (VEGp: 0.09; VEGr: 0.07; PIC: 0.05; SPI: 0.03) | 04-12 |
| *Anthriscus sylvestris* (L.) Hoffm. | Kımı, mendek, özek | Young leaves and shoots | Dishes, pickled, raw, cheese flavoring | May-Jun | 0.41 (VEGp: 0.09; VEGr: 0.14; PIC: 0.17; SPI: 0.04) | 04-9 |
| *Chaerophyllum bulbosum* L. | Kımı, guını, mendek | Young leaves and shoots | Dishes, pickles, raw, cheese flavoring | May-Jun | 0.19 (VEGp: 0.05; VEGr: 0.07; PIC: 0.06; SPI: 0.01) | 04-10 |
| *Chaerophyllum crinitum* Boiss. | Kımı, mendek | Young leaves and shoots | Dishes, pickles, raw, cheese flavoring | May-Jun | 0.14 (VEGp: 0.03; VEGr: 0.04; PIC: 0.04; SPI: 0.03) | 24-01 |
| *Eryngium billardierei* F. Delanoche | Boğa dikeni, Gelenk, Gelenknebi | Young shoots | Raw, dishes, pickles | May-Jun | 0.69 (VEGp: 0.44; VEGr: 0.06; PIC: 0.19) | 04-16 |
| *Eryngium campestre* L. | Boğa dikeni, Gelenk, Gelenknebi | Young leaves and shoots | Dishes, pickles | May-Jun | 0.64 (VEGp: 0.35; PIC: 0.29) | 04-17 |
| *Falcaria vulgaris* Bernh. | Gazayağı, pigast, pigozik, yağlıca | Young plants | Dishes | May-Jun | 0.63 (VEGc) | 58-75 |
| *Ferula orientalis* L. | Heliz | Young leaves and shoots | Pickles | Jun-Jul | 0.75 (PIC) | 76-4 |
| *Heracleum trachyloma* Fisch. & C. Mey. | Kaşın, sh, süh | Young leaves and shoots | Dolma | May-Jun | 0.07 (VEGc) | 04-13 |
| *Pastinaca armens* Fisch. & C. Mey. | Kelemenkesir | Young leaves and shoots | Pickles | May-Jun | 0.55 (PIC) | 04-15 |
| *Paragya platycarpa* Boiss. | Heliz, çakşur | Young leaves and shoots | Pickles | Jun-Jul | 0.78 (PIC) | 24-3 |
| *Xanthogalum purpurascens* Lalam. | Kaşın, baldırgan | Young leaves and shoots | Raw | May-Jun | 0.05 (VEGr) | 04-14 |
| ARACEAE | *Arum rupicola* Boiss. | Garibent | Leaves | Dried, dishes | May-Jun | 0.70 (VEGc) | 58-09 |
| ASPARAGACEAE | *Asparagus officinalis* L. | Satsun | Young shoots and shoots | Dishes | Apr-May | 0.05 (VEGc) | 75-1 |
| *Ornithogalum platyphylloides* Boiss. | Şuluk | Young leaves and shoots | Dishes | Apr-May | 0.15 (VEGc) | 04-19 |
| *Ornithogalum sphacelatum* A. Kern | Şuluk, soğan | Young leaves and shoots | Dishes | Apr-May | 0.11 (VEGc) | 04-18 |

(Continued)
APPENDIX 1. (Continued) Selected attributes of the surveyed wild edible plants used in the Ağrı province, Turkey. BEV: beverage, EXU: exudates, PIC: pickles, SEE: seeds, SPI: spices, SUB: subterranean parts, VEGc: cooked, VEGp: pickled, VEGr: raw; dolma: stuffed leaves or vegetables; şerbet: a diluted form of mixed syrups produced with the addition of sugar.

| Species                        | Turkish common name                  | Used parts                              | Preparation     | Consum. time | CI         | Voucher |
|--------------------------------|--------------------------------------|-----------------------------------------|-----------------|--------------|------------|----------|
| Asteraceae                     |                                      |                                        |                 |              |            |          |
| *Arctium tomentosum* Mill.     | Düvetabanı, devetabanı, gelbeni       | Root collar, leaves                     | Raw, cooked     | May-Jun      | 0.66 (SUB) | 58-79    |
| *Artemisia absinthium* L.      | Havşan, süpürgeotu                    | Young shoots                            | Raw             | May-Jun      | 0.05 (VEGr) | 04-31    |
| *Carduus nutans* L.            | Eşek diken                           | Shoots and young leaves                 | Dishes, raw     | May-Jun      | 0.28 VEGp: 0.07; VEGr: 0.21 | 25-18 |
| *Centaurea* sp.                | Diken                                | Shoots                                  | Raw             | May-Jun      | 0.13 (VEGr) | 04-29    |
| *Cirsium rhezocephalum* C.A Mey. | Medik, kopuk, ammik           | Roots and root collar                   | Cooked, raw     | May-Jun      | 0.26 (SUB) | 24-66    |
| *Echinops pungens* Trautv.     | Eşek diken, boğadikeni, gelenk, gelenknedi | Young inflorescences                  | Raw             | May-Jun      | 0.20 (VEGr) | 04-28    |
| *Gandelia tournefortii* L.     | Kenger                               | Young leaves, shoots, latex and seeds   | Dishes, chewing gum, kernels | May-Jun | 0.97 VEGp: 0.59; EXU: 0.25 | 04-30 |
| *Onopordum acanthium* L.      | Kangal, gelenk                       | Root collar and young shoots            | Cooked, raw     | May-Jun      | 0.70 (VEGp: 0.14; VEGr: 0.34; SUB: 0.21) | 58-02 |
| *Scorzonera* con var. *jacquiriana* (W. Koeh) D.F. Chamb. | Teke sakalı                           | Young leaves and shoots                 | Cooked, raw     | May-Jun      | 0.52 (VEGp: 0.34; VEGr: 0.18) | 04-25 |
| *Scorzonera* latifolia (Fisch. & C.A. Mey.) DC. | Yabani sakz                          | Shoots and root latex                  | Chewing gum     | May-Jun      | 0.07 (EXU) | 04-27    |
| *Scorzonera* mollis M. Bib.    | Kızır, navneri, sipink               | Young leaves and shoots                 | Raw, dishes     | May-Jun      | 0.79 (VEGp: 0.51; VEGr: 0.28) | 04-23 |
| *Scorzonera* mollis subsp szowitzii (DC) D.F. Chamb. | Kızır                            | Young leaves and shoots                 | Raw, dishes     | May-Jun      | 0.52 (VEGp: 0.34; VEGr: 0.18) | 04-25 |
| *Scorzonera* phaeopappa (Boiss.) Boiss. | Navneri                            | Young leaves and shoots                 | Raw, dishes     | May-Jun      | 0.29 (VEGp: 0.23; VEGr: 0.06) | 04-24 |
| *Scorzonera suberosa* K. Koch subsp. suberosa | Kızır, navneri, sipink, tombalak, tombalak | Young leaves and shoots                 | Raw, dishes     | May-Jun      | 0.89 (VEGp: 0.27; VEGr: 0.63) | 04-20 |
| *Tragopogon aureus* Boiss.     | Sping, yemlik, spidak                | Young shoots and leaves                 | Raw, dishes     | May-Jun      | 0.89 (VEGp: 0.27; VEGr: 0.63) | 04-20 |
| *Tragopogon dubius* Scop.      | Sping, yemlik, spidak                | Young shoots and leaves                 | Dishes          | May-Jun      | 0.86 (VEGc) | 04-22    |
| *Tragopogon portulifolius* subsp. *longirostris* (Sch. Bip.) Greuter | Sping, yemlik                      | Young shoots and leaves                | Dishes          | May-Jun      | 0.98 (VEGc) | 04-21    |
| Boraginaceae                   |                                      |                                        |                 |              |            |          |
| *Anchusa leptophylla* Roem. & Schult. | Öküzmemesi, öküzkulağı              | Young plant                            | Dishes          | May-Jun      | 0.94 (VEGc) | 58-81    |
| *Cerinthe minor* L.            | Cücegözü                            | Young shoots                            | Dishes          | May-Jun      | 0.08 (VEGc) | 76-21    |
| *Echium vulgar L.*             | Öküzmemesi, öküzkulağı               | Young shoots and leaves                 | Dishes          | May-Jun      | 0.61 (VEGc) | 75/76-11 |
| *Nonea melanocarpa* Boiss.     | Mızmızık                            | Young shoots and leaves                 | Dishes          | May-Jun      | 0.91 (VEGc) | 36-14    |
| Brassicaceae                   |                                      |                                        |                 |              |            |          |
| *Alliaria petiolaris* (M. Beib.) Cavara & Grande | Dida                       | Young shoots and leaves                 | Raw, dishes     | May-Jun      | 0.26 (VEGp: 0.18; VEGr: 0.08) | 04-32 |
| *Alyssum peltarioides* Boiss.  | Mevrân                               | All parts of plant                      | Tea, salads, spice | May-Jun | 0.84 (SPI: 0.35; BEV: 0.49) | 04-33 |
| *Capsella bursa-pastoris* (L.) Medik. | Pancar, devredişık, turpotu, kuskeğme | Young shoots and leaves               | Raw, dishes     | May-Jun      | 0.93 (VEGp: 0.81; VEGr: 0.12) | 58-52 |
| *Cardamine uliginosa* M. Beib. | Gici                                 | Young shoots and leaves                 | Raw             | May-Jun      | 0.83 (VEGc) | 24-23/01 |

(Continued)
APPENDIX 1. (Continued) Selected attributes of the surveyed wild edible plants used in the Ağrı province, Turkey. BEV: beverage, EXU: exudates, PIC: pickles, SEE: seeds, SPI: spices, SUB: subterranean parts, VEGc: cooked, VEGp: pickled, VEGr: raw; dolma: stuffed leaves or vegetables; şerbet: a diluted form of mixed syrups produced with the addition of sugar.

| Species                          | Turkish common name                  | Used parts                           | Preparation      | Consum. time | CI          | Voucher |
|----------------------------------|--------------------------------------|--------------------------------------|------------------|--------------|-------------|---------|
| Sinapis arvensis L.              | Tülpenk                               | Young shoots and leaves              | Raw, dishes      | May-Jun      | 0.60 (VEGp: 0.21; VEGr: 0.29) | 58-25   |
| **CAPRIFOLIAE**                  |                                      |                                      |                  |              |             |         |
| Cephalaria syriaca (L.) Schrad.  | Onum                                 | Seeds                                | Bread            | Aug-Sep      | 0.10 (SEE)  | 25-4    |
| **CARYOPHYLLACEAE**              |                                      |                                      |                  |              |             |         |
| Silene vulgaris (Moench) Garcke var. vulgaris | Goşberg                              | Young leaves and shoots              | Dishes           | May-Jun      | 0.93 (VEGc) | 24-14   |
| **CRASSULACEAE**                 |                                      |                                      |                  |              |             |         |
| Hylotelephium telephium (L.) H. Ohba | Camişkulağı, katırtırnağı, katırtunağı, kayapapaği | Leaves                            | Raw              | May-Jun      | 0.62 (VEGc) | 36-15   |
| **FABACEAE**                     |                                      |                                      |                  |              |             |         |
| Lathyrus tuberosus L.            | Gürül, gürül, kırgülü, koçgüzü        | Young leaves, shoots, root collar, fruits | Raw             | May-Jun      | 0.06 (VEGr: 0.01; SUB: 0.05) | 25-16   |
| Ononis spinosa L.                | Hatunbarması                         | Young leaves and shoots              | Dishes           | May-Jun      | 0.07 (VEGc) | 04-36   |
| Vicia cracca L.                  | Gürülü, kılur, külül, fiğ, geda      | Young leaves, shoots, seeds          | Raw, cooked      | May-Jun      | 0.05 (VEGp: 0.02; VEGr: 0.01; SEE: 0.03) | 36-20   |
| **HYPERICACEAE**                 |                                      |                                      |                  |              |             |         |
| Hypericum perfoliatum L.         | Sanççıççek                            | Young shoots                          | Tea              | Year round   | 0.23 (BEV)  | 04-37   |
| **IRIDACEAE**                    |                                      |                                      |                  |              |             |         |
| Crocus biflorus subsp. tauri (Maw) B. Mathew. | Çiğdem                              | Young leaves, corms                  | Cooked, raw      | Mar-Apr      | 0.53 (VEGp: 0.26; SUB: 0.27) | 25-9    |
| Iris persica L.                  | Nergiz                               | Flowers                              | Raw, tea         | Mar-Apr      | 0.33 (VEGr: 0.27; BEV: 0.06) | 24-10   |
| **LAMIACEAE**                    |                                      |                                      |                  |              |             |         |
| Mentha longifolia L.             | Yarpuz, punk, nana                    | Young leaves                          | Raw, tea, spices | Year round   | 0.97 (VEGr: 0.02; SPI: 0.89; BEV: 0.06) | 04-45   |
| Nepeta racemosa Lam.             | Kedinanesi, sendar                    | Young leaves and shoots              | Raw, tea         | Year round   | 0.20 (VEGp: 0.02; SPI: 0.15; BEV: 0.03) | 25-202  |
| Nepetaitalic L.                  | Sendar, dağ namesi, mevrent          | Young leaves and shoots              | Raw, tea, spices | Year round   | 0.39 (VEGp: 0.07; SPI: 0.25; BEV: 0.08) | 04-38   |
| Salvia mitschudica Vahl.         | Dağçayı                               | Young shoots and leaves              | Raw, tea, spices | May-Jun      | 0.21 (VEGp: 0.04; SPI: 0.14; BEV: 0.03) | 04-47   |
| Salvia staminea Montbret & Aucher ex Benth. | Gazangülüpu, öküzpoçüğü, kediayağı  | Young shoots                          | Raw              | May-Jun      | 0.17 (VEGr)  | 76-13   |
| Salvia verticillata L.            | Karabaşotu, gazankarasi               | Young shoots and leaves              | Dolma, raw       | May-Jun      | 0.83 (VEGp: 0.31; VEGr: 0.52) | 04-46   |
| Satureja hortensis L.            | Çibriska                              | Young leaves and tuber               | Raw, tea, spices | Year round   | 0.70 (VEGp: 0.10; SPI: 0.31; BEV: 0.28) | 25-10   |
| Stachys kuandahifoka Vahl.        | Dağçayı, cayabeyan                    | Young leaves and shoots              | Raw, tea, spices | Year round   | 0.76 (VEGp: 0.24; SPI: 0.47; BEV: 0.04) | 04-44   |
| Teucrium chamaedrys L.            | Dağ kekiği                            | Young shoots                          | Salads, dried    | Year round   | 0.05 (VEGp: 0.02; SPI: 0.03) | 04-50   |
| Teucrium polium L.               | Keklik otu, çay                        | Young shoots                          | Salads, dried    | Year round   | 0.41 (VEGp: 0.13; SPI: 0.29) | 04-49   |
| Thymus kotschyanus Boiss. & Hohen. | Kekik, keklikotu çağıtrı,             | Young leaves and shoots              | Raw, tea, spices | Year round   | 0.90 (VEGp: 0.27; SPI: 0.55; BEV: 0.08) | 04-41   |
| Thymus pubescens Boiss. & Kotschy ex Celak. | Kekik, keklikotu çağıtrı               | Young leaves and shoots              | Raw, tea, spices | Year round   | 0.84 (VEGp: 0.24; SPI: 0.49; BEV: 0.11) | 04-42   |

(Continued)
APPENDIX 1. (Continued) Selected attributes of the surveyed wild edible plants used in the Ağrı province, Turkey. BEV: beverage, EXU: exudates, PIC: pickles, SEE: seeds, SPI: spices, SUB: subterranean parts, VEGc: cooked, VEGp: pickled, VEGr: raw; dolma: stuffed leaves or vegetables; şerbet: a diluted form of mixed syrups produced with the addition of sugar.

| Species | Turkish common name | Used parts | Preparation | Consum. time | CI | Voucher |
|---------|---------------------|------------|-------------|--------------|----|---------|
| Thymus sipyleus Boiss. | Kekik, keklikotu, Kekeotu, Çağtiri, | Young leaves and shoots | Raw, tea, spices | Year round | 0.89 (VEGr: 0.19; SPI: 0.63; BEV: 0.06) | 24-65/01 |
| Ziziphora clinopodioides Lam. | Nane, kekik | Young leaves and shoots | Raw, tea, spices | Year round | 0.87 (VEGr: 0.26; SPI: 0.58; BEV: 0.03) | 04-48 |
| Malva neglecta Wallr. | Ebenkömeci, dollik | Young leaves and shoots | Dishes, raw | Apr-Jun | 0.91 (VEGp: 0.80; VEGr: 0.11) | 24-6-05 |
| Papaver argemone L. | Lale, taklog, budbad | Flowers | Sherbet | May-Jun | 0.30 (BEV) | 04-56 |
| Papaver cylindricum Cullen | Kabarek | Young shoots | Dishes | May-Jul | 0.05 (VEGc) | 04-54 |
| Papaver rhoes L. | Lale, taklog budbad | Young shoots | Dishes | May-Jun | 0.85 (VEGc) | 04-52 |
| Plantago major L. subsp. intermedia (Gilib.) Lange | Bağya yaprağı, pelhevis | Young leaves | Dishes | May-Jul | 0.59 (VEGc) | 24-39/02 |
| Plantago major L. | Bağya yaprağı, pelhevis | Young leaves | Dolma | May-Jul | 0.38 (VEGc) | 24-57 |
| Polygonum alpinum All. | Pancar, elegez, arıbisk | Young plants | Dishes | May-Jun | 0.06 (VEGc) | 04-58 |
| Polygonum aviculare L. | Madmak, nanacück | Young plants | Dishes | May-Jun | 0.61 (VEGc) | 24-60 |
| Polygonum cognatum Meissn. | Madmak, kuşlemği, nanacück, yolotu, nanisiği | Young plants | Dishes | May-Jun | 0.79 (VEGc) | 24-43/02 |
| Polygonum persicaria L. | Madmak, söğülotu | Young leaves and shoots | Dishes | May-Jun | 0.97 (VEGc) | 04-59 |
| Rheum alpinus L. | Işgın | Young flower stems | Raw | Jul | 0.88 (VEGr) | 24-37/02 |
| Rumex alpinus L. | Gariberk, kedipatasi, kersım yaprağı, bizbizik, pelidolma yaprağı | Young leaves and shoots | Dolma, dishes | May-Jun | 0.05 (VEGc) | 04-57 |
| Rumex crispus L. | Evelik, tirço tirçoaga, | Young leaves, shoots | Dolma, dishes | May-Jun | 0.92 (VEGc) | 04-53 |
| Rumex obtusifolius L. subsp. subalpinus (Schur) Celak. | Yaprak, çayrrıyaprağı | Young leaves and shoots | Dolma | May-Jun | 0.31 (VEGc) | 24-29 |
| Rumex patientia L. | Evelik, tirço, tirçoaga galar | Young leaves, shoots | Dolma, dishes | May-Jul | 0.91 (VEGc) | 04-55 |
| Rumex scutatus L. | Tirço, çekımken, tursuotu | Young leaves and shoots | Salads | May-Jul | 0.97 (VEGc) | 04-61 |
| Rumex tuberosus L. subsp. horizontalis (K. Koch.) Rech. f. | Tirço, tursuotu | Young leaves and shoots | Salads | May-Jul | 0.84 (VEGc) | 04-63 |
| Portulaca oleracea L. | Pirpirim | Young leaves and shoots | Dishes, salads | May-Jun | 0.07 (VEGp: 0.03; VEGr:0.04) | 24-56/01 |
| Primula auriculata Lam. | Gıbosan | Young shoots and flowers | Raw | May-Jun | 0.05 (VEGr) | 24-23/02 |
| Rubus idaeus L. | Yer çileği, Rasgaravi | Fruits | Jam | Jul-Aug | 0.87 (FRUc) | 25-12 |
| Rosa pimpinellifolia L. | Kuşburnu, gül | Fruits | Boiled | Sep-Nov | 0.55 (BEV: 0.18; FRUc:0.37) | 25-13 |
| Caltha palustris L. | Pisipis, lilpar, lilpar | Young leaves and shoots | Dishes (with eggs) | May-Jun | 0.93 (VEGc) | 04-60 |

(Continued)
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| Species | Turkish common name | Used parts | Preparation | Consum. time | CI   | Voucher |
|---------|---------------------|------------|-------------|--------------|------|---------|
| Thalictrum minus L | Karakatran | Young plants | Dishes | May-Jun | 0.49 (VEGc) | 24-39/01 |
| Urticaceae | Urtica dioica L. | Isırgan, gezgez | Young leaves, shoots and seeds | Dishes, boiled | May-Jul | 0.98 (VEGc) | 24-73 |
| Xanthorrhoeaceae | Eremurus spectabilis M. Bieb. | Çiriş, gullik, kiriş | Young plants | Dishes, pies | May-Jun | 0.82 (VEGc) | 24-18 |