

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, la 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.

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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 2010; Hummer 2013; Schulp & al. 2014; Reyes-García & al. 2015). Indeed, wild edible plants have been reported to be sources of folic acid, vitamin, minerals, carotenoids, and other valuable chemical substances, some of them with antioxidant activity (Hasler 2002; Pieroni & al. 2002; Ogle & al. 2003; Tapsell & al. 2006). Wild edible plants are also more likely to be free of herbicide and pesticide residues than cultivated plants. Previous studies

suggest 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; Tardío & al. 2006; Łukasz 2013; Reyes-García & 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-García & al. 2015).

Ethnobotanical studies on European wild edible plants have been mainly conducted in the Mediterranean region (Ertuğ 2004; Tardío & 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 (Kadioglu & al. 2020).

Turkey, at the crossroads between Europe and Asia, has a very rich flora in terms of wild food plants and several ethnobotanical studies have been conducted in various regions (e.g., Özgökçe & Özçelik 2004; Simsek & al. 2004; Kargioğlu & al. 2008; Öztürk & Dinç 2005; Satıl & al. 2008; Ezer & Arisan 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 seven of the eight districts of the Ağrı province, namely, Diyadin, Doğubayazıt, Eleşkirt, 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.

Site selection and survey

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 Kadioglu & 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 (Tardío & Pardo-de-Santayana 2008) was used to express the importance of the studied species:

$$UV_s = \sum UR/N$$

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



Fig. 1. Geographical location of the study region in Turkey.

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 perforatum* 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*

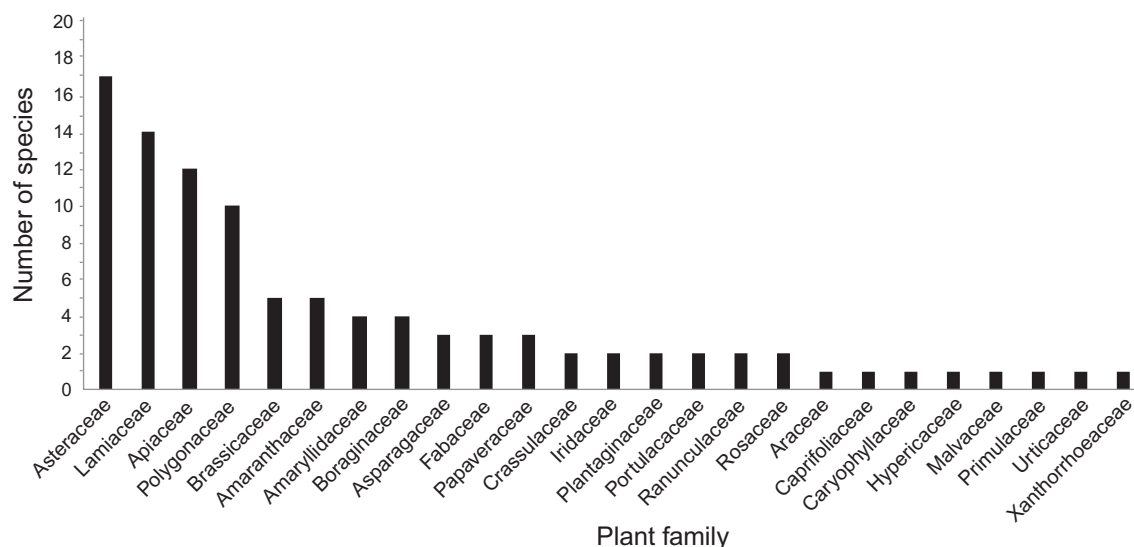


Fig. 2. Number of wild edible plants surveyed in the Ağrı province, distributed across plant families.

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 cognatum* Meisn., *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* (Cakilcioglu & Turkoglu 2010; Özgen & al. 2004; Ugulu & al. 2009; Ezer & Arisan 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),

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

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 (0.28) 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; Cakilcioglu & Turkoglu 2010; Çakilcioglu & al. 2010; Kadioglu & al. 2016, 2020).

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., *Rheum 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 trachyloma* 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 chamaedrys* L.) and others are consumed without any preparation. For instance, the fresh leaves of *Allium kharputense* Freyn & Sint., *Allium gramineum* K.Koch (Körmen, Sir, Sirim), *Arctium tomentosum* Mill., *Caltha palustris*, *Plantago major*, *Rumex crispus*, *Rumex obtusifolius* subsp. *subalpinus*, *Rumex patientia*, and *Xanthogalum purpurascens* Lallemand 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 atroviolaceum* Boiss., *Anthriscus nemorosa* (M.Bieb) Spreng., *Carduus nutans* L., *Heracleum trachyloma*, *Hylotelephium telephium* (L.) H.Ohba, *Onopordum acanthium* L., *Rheum ribes*, *Scorzonera cana* (C.A.Meyer) Griseb. var. *jacquiniana* (W.Koch) D.F.Chamb., *Scorzonera mollis* subsp. *szowitzii*, *Sempervivum minus* Turrit 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, tartness 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 platychlaena* 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 platychlaena* (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 2001; Grivetti 1981).

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 sipyleus* 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, *Rezepte*, *Mamzana*. Additionally, dried parts of them are cooked and consumed in yogurt soups such as Turkish Yogurt Soup. Many of them 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 peltarioides* 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; Özgökçe & Özçelik 2004; Kırbağ & 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 rhocephalum* 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 phytonym of wild edibles consisted in 157 local names, 145 simple (e.g., söğütotu, kuşkemeği) and 12 complex names (e.g., yabani sakız, yer çileği) (Appendix 1). The average number of names by species was 2.13, having most species one, two or three names (35, 29 and 25 species respectively). Generic names that are used for several species were also common. For instance kımı 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*; tirşo, *Rumex scutatus*, *Rumex tuberosus* subsp. *horizontalis*; işgım, *Rheum ribes*; isırgan, *Urtica dioica* L.; çiriş, *Eremurus spectabilis* M. Bieb.). Kurdish is also spoken in the area and four Kurdish names were mentioned: tirşo, *Rumex crispus*, *Rumex patientia*, *Rumex scutatus*, *Rumex tuberosus* subsp. *horizontalis*; silgok, *Beta trigyna*, *Beta lomatoğona* Fisch. & C.A. Mey.; sirim, *Allium* sp., *Allium atroviolaceum*, *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*, ebeğümeci; *Polygonum cognatum*, madımak; *Rheum ribes*, işkın; *Urtica dioica*, isırgan; *Rumex scutatus*, ekşime; *Rumex crispus* L., evelik; *Eryngium billardiieri* F.Delaroche, boğa diken) (Yücel & Tülükoğlu 2000; Sarper & al. 2009; Arı & al. 2015; Çakılcioglu & Turkoglu 2010). 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*, cıvrıncık, gelin parmağı; *Capsella bursa-pastoris*, çoban çantası; *Ononis spinosa* L., kayışkıran; *Salvia multicaulis*, adaçayı; *Teucrium chamaedrys*, mayasılotu; *Teucrium polium* L., ülper yavşanı, acı ot; *Papaver rhoeas* L., gelincik; *Rumex scutatus*, kuzukulağı; *Portulaca oleracea*, semizotu, temizlik out; *Chenopodium album* subsp. *album*, sarı sirken; *Beta trigyna*, kır ispanağı; *Rumex patientia*, ilibada; *Polygonum*

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 nutrition 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						
<i>Amaranthus retroflexus</i> L.	Bostanpancari, bozoglan	Young leaves and shoots	Dishes	May-Jul	0.98 (VEGc)	04-2
<i>Beta lomatogona</i> Fisch. & C.A. Mey.	Silgok, pazi pancari	Young leaves and shoots	Dishes	May-Jun	0.89 (VEGc)	25-01
<i>Beta trigyna</i> Walds. & Kit.	Silgok, pancar, pazi pancari, silk	Young leaves and shoots	Dishes	May-Jun	0.97 (VEGc)	04-1
<i>Chenopodium album</i> L. subsp. <i>album</i>	Silmask, unluca	Young leaves and shoots	Dishes	May-Jun	0.86 (VEGc)	04-3
<i>Chenopodium foliosum</i> Asch.	Kızılpancar	Young leaves and shoots	Dishes	May-Jun	0.21 (VEGc)	04-4
AMARYLLIDACEAE						
<i>Allium atroviolaceum</i> Boiss.	Sirim	Leaves, bulbs	Dishes	May	0.49 (VEGc)	04-8
<i>Allium granineum</i> K. Koch	Körmen, sir, sirim	Young leaves	Raw, cheese flavoring	May	0.36 (VEGr: 0.29; SPI: 0.07)	04-5
<i>Allium kharputense</i> Freyn & Sint.	Suğuryos, camışkran	Leaves	Dishes	May-Jun	0.18 (VEGc)	04-6
<i>Allium</i> sp.	Sirim, itsogan	Leaves, bulbs	Raw, cheese flavoring	May	0.21 (VEGc: 0.15; SPI: 0.06)	04-7
APIACEAE						
<i>Anthriscus nemorosa</i> (M. Bieb) Spreng.	Kımi, 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
<i>Anthriscus sylvestris</i> (L.) Hoffm.	Kımi, 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
<i>Chaerophyllum bulbosum</i> L.	Kımi, grmi, 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
<i>Chaerophyllum crinitum</i> Boiss.	Kımi, 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
<i>Eryngium billardierei</i> F. Delaroché	Boğa dikeni, Gelenk, Gelenknebi	Young shoots	Raw, dishes, pickles	May-Jun	0.69 (VEGp: 0.44; VEGr: 0.06; PIC: 0.19)	04-16
<i>Eryngium campestre</i> L.	Boğa dikeni, Gelenk, Gelenknebi	Young leaves and shoots	Dishes, pickles	May-Jun	0.64 (VEGc: 0.35; PIC: 0.29)	04-17
<i>Falcaria vulgaris</i> Bernh.	Gazayağı, pigast, pigozik, yağlıca	Young plants	Dishes	May-Jun	0.63 (VEGc)	58-75
<i>Ferula orientalis</i> L.	Heliz	Young leaves and shoots	Pickles	Jun-Jul	0.75 (PIC)	76-4
<i>Heracleum trachyloma</i> Fisch. & C. Mey.	Kaşm, sıh, süh	Young leaves and shoots	<i>Dolma</i>	May-Jun	0.07 (VEGc)	04-13
<i>Pastinaca armena</i> Fisch. & C.A. Mey.	Kelemenkesir	Young leaves and shoots	Pickles	May-Jun	0.55 (PIC)	04-15
<i>Prangos platyclaena</i> Boiss.	Heliz, çakşur	Young leaves and shoots	Pickles	Jun-Jul	0.78 (PIC)	24-3
<i>Xanthogalum purpurascens</i> Lallemand	Kaşm, baldırgan	Young leaves and shoots	Raw	May-Jun	0.05 (VEGr)	04-14
ARACEAE						
<i>Arum rupicola</i> Boiss.	Garibent	Leaves	Dried, dishes	May-Jun	0.70 (VEGc)	58-09
ASPARAGACEAE						
<i>Asparagus officinalis</i> L.	Satasun	Young shoots and shoots	Dishes	Apr-May	0.05 (VEGc)	75-1
<i>Ornithogalum platyphyllum</i> Boiss.	Şuluk	Young leaves and shoots	Dishes	Apr-May	0.15 (VEGc)	04-19
<i>Ornithogalum sphaerocarpum</i> 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						
<i>Arctium tomentosum</i> Mill.	Düvetabani, devetabani, gelbeni	Root collar, leaves	Raw, cooked	May-Jun	0.66 (SUB)	58-79
<i>Artemisia absinthium</i> L.	Havşan, süpürgeotu	Young shoots	Raw	May-Jun	0.05 (VEGr)	04-31
<i>Carduus nutans</i> L.	Eşek dikeni	Shoots and young leaves	Dishes, raw	May-Jun	0.28 VEGp: 0.07; VEGr: 0.21	25-18
<i>Centaurea</i> sp.	Diken	Young shoots	Raw	May-Jun	0.13 (VEGr)	04-29
<i>Cirsium rhizocephalum</i> C.A. Mey.	Medik, kopuk, ammik	Roots and root collar	Cooked, raw	May-Jun	0.26 (SUB)	24-66
<i>Echinops pungens</i> Trautv.	Eşek dikeni, boğadikeni, gelenk, gelenknebi	Young inflorescences	Raw	May-Jun	0.20 (VEGr)	04-28
<i>Gundelia tournefortii</i> L.	Kenger	Young leaves, shoots, latex and seeds	Dishes, chewing gum, kernels	May-Jun	0.97 VEGp: 0.59; EXU: 0.25	04-30
<i>Onopordum acanthium</i> 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
<i>Scorzonera cana</i> var. <i>jacquiniana</i> (W. Koch) D.F. Chamb.	Teke sakalı	Young leaves and shoots	Raw, dishes	May-Jun	0.84 (VEGp: 0.42; VEGr: 0.42)	58-39
<i>Scorzonera latifolia</i> (Fisch. & C.A. Mey.) DC.	Yabancı sakız	Shoots and root latex	Chewing gum	May-Jun	0.07 (EXU)	04-27
<i>Scorzonera mollis</i> M. Bieb.	Kızır, navneri, sipink	Young leaves and shoots	Raw, dishes	May-June	0.52 (VEGp: 0.34; VEGr: 0.18)	04-25
<i>Scorzonera mollis</i> subsp. <i>szowitzii</i> (DC) D.F. Chamb.	Kızır	Young leaves and shoots	Raw, dishes	May-Jun	0.79 (VEGp: 0.51; VEGr: 0.28)	04-23
<i>Scorzonera phaeopappa</i> (Boiss.) Boiss.	Navneri	Young leaves and shoots	Raw, dishes	May-Jun	0.29 (VEGp: 0.23; VEGr: 0.06)	04-24
<i>Scorzonera suberosa</i> K. Koch subsp. <i>suberosa</i>	Kızır, navneri, sipink, tombalak	Young leaves and shoots	Raw, dishes	May-Jun	0.60 (VEGp: 0.49; VEGr: 0.11)	04-26
<i>Tragopogon aureus</i> Boiss.	Sping, yemlik, spidak	Young shoots and leaves	Raw, dishes	May-Jun	0.89 (VEGp: 0.27; VEGr: 0.63)	04-20
<i>Tragopogon dubius</i> Scop.	Sping, yemlik, spidak	Young shoots and leaves	Dishes	May-Jun	0.86 (VEGc)	04-22
<i>Tragopogon porrifolius</i> subsp. <i>longirostris</i> (Sch. Bip.) Greuter	Sping, yemlik	Young shoots and leaves	Dishes	May-Jun	0.98 (VEGc)	04-21
BORAGINACEAE						
<i>Anchusa leptophylla</i> Roem. & Schult.	Öküzmemesi, öküzkulagi	Young plant	Dishes	May-Jun	0.94 (VEGc)	58-81
<i>Cerintho minor</i> L.	Cücegözü	Young shoots	Dishes	May-Jun	0.08 (VEGc)	76-21
<i>Echium vulgare</i> L.	Öküzmemesi, öküzkulagi	Young shoots and leaves	Dishes	May-Jun	0.61 (VEGc)	75/76-11
<i>Nonoa melanocarpa</i> Boiss.	Mızızmızık	Young plant	Dishes	May	0.91 (VEGc)	36-14
BRASSICACEAE						
<i>Alliaria petiolata</i> (M. Bieb.) Cavara & Grande	Dida	Young shoots and leaves	Raw, dishes	May-June	0.26 (VEGp: 0.18; VEGr: 0.08)	04-32
<i>Alyssum peltarioides</i> Boiss.	Mevran	All parts of plant	Tea, salads, spice	May-Jun	0.84 (SPI: 0.35; BEV: 0.49)	04-33
<i>Capsella bursa-pastoris</i> (L.) Medik.	Pancar, devredüşk, turpotu, kuşknegi	Young shoots and leaves	Raw, dishes	May-Jun	0.93 (VEGp: 0.81; VEGr: 0.12)	58-52
<i>Cardamine uliginosa</i> M. Bieb.	Gırcı	Young shoots and leaves	Raw	May-Jun	0.83 (VEGr)	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
<i>Sinapis arvensis</i> L. CAPRIFOLIACEAE	Tülpenk	Young shoots and leaves	Raw, dishes	May-Jun	0.60 (VEGp: 0.21; (VEGr: 0.29)	58-25
<i>Cephalaria syriaca</i> (L.) Schrad. CARYOPHYLLACEAE	Orum	Seeds	Bread	Aug-Sep	0.10 (SEE)	25-4
<i>Silene vulgaris</i> (Moench) Garcke var. <i>vulgaris</i> CRASSULACEAE	Göşberg	Young leaves and shoots	Dishes	May-Jun	0.93 (VEGc)	24-14
<i>Hylotelephium telephium</i> (L.) H. Ohba FABACEAE	Camişkuğu, katırtırnağı, katırkulağı, kayapapağı Gelinparmağı	Leaves Leaves	Raw Raw	May-Jun May-Jun	0.62 (VEGc) 0.67 (VEGc)	36-15 04-35
<i>Sempervivum minus</i> Turrril ex Wale. FABACEAE	Gürül, gürtlü, krgülü, koçgözü	Young leaves, shoots, root collar, fruits	Raw	May-Jun	0.06 (VEGr: 0.01; SUB: 0.05)	25-16
<i>Lathyrus tuberosus</i> L. ONONIDACEAE	Hatunbarmağı	Young leaves and shoots	Dishes	May-Jun	0.07 (VEGc)	04-36
<i>Ononis spinosa</i> L. VICIACEAE	Gürülü, kıtur, kıtlül, fig, geda	Young leaves, shoots, seeds	Raw, cooked	May-Jun	0.05 (VEGp: 0.02; VEGr: 0.01; SEE: 0.03)	36-20
HYPERICACEAE <i>Hypericum perforatum</i> L. IRIDACEAE	Sançiçek	Young shoots	Tea	Year round	0.23 (BEV)	04-37
<i>Crocus biflorus</i> subsp. <i>tauri</i> (Maw) B. Mathew. IRIDACEAE	Çiğdem	Young leaves, corms	Cooked, raw	Mar-Apr	0.53 (VEGp: 0.26; SUB: 0.27)	25-9
<i>Iris persica</i> L. LAMIACEAE	Nergiz	Flowers	Raw, tea	Mar-Apr	0.33 (VEGr: 0.27; BEV: 0.06)	24-10
<i>Mentha longifolia</i> L. LAMIACEAE	Yarpuz, punk, nana	Young leaves	Raw, tea, spices	Year round	0.97 (VEGr: 0.02; SPI: 0.89; BEV: 0.06)	04-45
<i>Nepeta racemosa</i> Lam. LAMIACEAE	Kedinanesi, sendar	Young leaves and shoots	Raw, tea, spices	Year round	0.20 (VEGr: 0.02; SPI: 0.15; BEV: 0.03)	25-2/02
<i>Nepeta italica</i> L. LAMIACEAE	Sendar, dağ nanesi, mevrent	Young leaves and shoots	Raw, tea, spices	Year round	0.39 (VEGr: 0.07; SPI: 0.25; BEV: 0.08)	04-38
<i>Salvia multicaulis</i> Vahl. LAMIACEAE	Dağçayı	Young shoots and leaves	Raw, tea, spices	May-Jun	0.21 (VEGr: 0.04; SPI: 0.14; BEV: 0.03)	04-47
<i>Salvia staminea</i> Montbret & Aucher ex Benth. LAMIACEAE	Gazangulpu, öküzpöçüğü, kediyacağı	Young shoots	Raw	May-Jun	0.17 (VEGr)	76-13
<i>Salvia verticillata</i> L. subsp. <i>verticillata</i> LAMIACEAE	Karabaşotu, gazankarası	Young shoots and leaves	<i>Dolma</i> , raw	May-Jun	0.83 (VEGp: 0.31; VEGr: 0.52)	04-46
<i>Satureja hortensis</i> L. LAMIACEAE	Çibriska	Young leaves and tuber	Raw, tea, spices	Year round	0.70 (VEGr: 0.10; SPI: 0.31; BEV: 0.28)	25-10
<i>Stachys lavandulifolia</i> Vahl. LAMIACEAE	Dağçayı, cayabeyan	Young leaves and shoots	Raw, tea, spices	Year round	0.76 (VEGr: 0.24; SPI: 0.47; BEV: 0.04)	04-44
<i>Teucrium chamaedrys</i> L. LAMIACEAE	Dağ kekiği	Young shoots	Salads, dried	Year round	0.05 (VEGr: 0.02; SPI: 0.03)	04-50
<i>Teucrium polium</i> L. LAMIACEAE	Keklik otu, çay	Young shoots	Salads, dried	Year round	0.41 (VEGr: 0.13; SPI: 0.29)	04-49
<i>Thymus kotschyanus</i> Boiss. & Hohen. LAMIACEAE	Kekik, keklikotu çağtiri,	Young leaves and shoots	Raw, tea, spices	Year round	0.90 (VEGr: 0.27; SPI: 0.55; BEV: 0.08)	04-41
<i>Thymus pubescens</i> Boiss. & Kotschy ex Celak. LAMIACEAE	Kekik, keklikotu çağtiri	Young leaves and shoots	Raw, tea, spices	Year round	0.84 (VEGr: 0.24; SPI: 0.49; BEV: 0.11)	04-42

(Continued)

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<i>Thymus siphyleus</i> Boiss.	Kekik, keklikotu, Kekotu, Çağtiri,	Young leaves and shoots	Raw, tea, spices	Year round	0.89 (VEGr: 0.19; SPI: 0.63; BEV: 0.06)	24-65/01
<i>Ziziphora clinopodioides</i> 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
MALVACEAE						
<i>Mahia neglecta</i> Wallr.	Eberkömeci, dollik	Young leaves and shoots	Dishes, raw	Apr-Jun	0.91 (VEGp: 0.80; VEGr: 0.11)	24-6/05
PAPAVERACEAE						
<i>Papaver argemone</i> L.	Lale, taklog, bidbid	Flowers	<i>Sherbet</i>	May-Jun	0.30 (BEV)	04-56
<i>Papaver cylindricum</i> Cullen	Kabarcik	Young shoots	Dishes	May-Jul	0.05 (VEGc)	04-54
<i>Papaver rhoeas</i> L.	Lale, taklog bidbid	Young shoots	Dishes	May-Jun	0.85 (VEGc)	04-52
PLANTAGINACEAE						
<i>Plantago major</i> L. subsp. <i>intermedia</i> (Gilib.) Lange	Bağa yaprağı, pelhevis	Young leaves	Dishes	May-Jul	0.59 (VEGc)	24-39/02
<i>Plantago major</i> L.	Bağa yaprağı, pelhevis	Young leaves	<i>Dolma</i>	May-Jul	0.38 (VEGc)	24-57
POLYGONACEAE						
<i>Polygonum alpinum</i> All.	Pancar, elegez, arbisk	Young plants	Dishes	May-Jun	0.06 (VEGc)	04-58
<i>Polygonum aviculare</i> L.	Madımak, nanacıcu	Young plants	Dishes	May-Jun	0.61 (VEGc)	24-60
<i>Polygonum cognatum</i> Meissn.	Madımak, kuşyemliği, nanacıcu, yolotu, nancıvığı	Young plants	Dishes	May-Jun	0.79 (VEGc)	24-43/02
<i>Polygonum persicaria</i> L.	Madımak, söğütötu	Young leaves and shoots	Dishes	May-Jun	0.97 (VEGc)	04-59
<i>Rheum ribes</i> L.	İşgin	Young flower stems	Raw	Jul	0.88 (VEGr)	24-37/02
<i>Rumex alpinus</i> L.	Gariberk, kedipatisi, kersim yaprağı, bizbizik, pelidolma yaprağı	Young leaves and shoots	<i>Dolma</i> , dishes	May-Jun	0.05 (VEGc)	04-57
<i>Rumex crispus</i> L.	Evelik, tirşo tirşoaga,	Young leaves, shoots	<i>Dolma</i> , dishes	May-Jul	0.92 (VEGc)	04-53
<i>Rumex obtusifolius</i> L. subsp. <i>subalpinus</i> (Schur) Celak.	Yaprak, çayrıyaprağı	Young leaves and shoots	<i>Dolma</i>	May-Jun	0.31 (VEGc)	24-29
<i>Rumex patientia</i> L.	Evelik, tirşo, tirşoaga galur	Young leaves, shoots	<i>Dolma</i> , dishes	May-Jul	0.91 (VEGc)	04-55
<i>Rumex scutellus</i> L.	Tirşo, ekşimen, turşuotu	Young leaves and shoots	Salads	May-Jul	0.97 (VEGc)	04-61
<i>Rumex tuberosus</i> L. subsp. <i>horizontalis</i> (K. Koch.) Rech. f.	Tirşo, turşuotu	Young leaves and shoots	Salads	May-Jul	0.84 (VEGc)	04-63
PORTULACACEAE						
<i>Portulaca oleracea</i> L.	Pirpirim	Young leaves and shoots	Dishes, salads	May-Jun	0.07 (VEGp: 0.03; VEGr: 0.04)	24-56/01
PRIMULACEAE						
<i>Primula auriculata</i> Lam.	Gılsosan	Young shoots and flowers	Raw	May-Jun	0.05 (VEGr)	24-23/02
ROSACEAE						
<i>Rubus idaeus</i> L.	Yer çileği, Rasgaruvi	Fruits	Jam	Jul-Aug	0.87 (FRUc)	25-12
<i>Rosa pimpinellifolia</i> L.	Kuşburnu, gül	Fruits	Boiled	Sep-Nov	0.55 (BEV: 0.18; FRUc: 0.37)	25-13
RANUNCULACEAE						
<i>Caltha palustris</i> L.	Pispis, lulpar, ilipar	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
<i>Thalictrum minus</i> L URTICACEAE	Karakatran	Young plants	Dishes	May-Jun	0.49 (VEGc)	24-39/01
<i>Urtica dioica</i> L. XANTHORRHOACEAE	Isrgan, gezgez	Young leaves, shoots and seeds	Dishes, boiled	May-Jul	0.98 (VEGc)	24-73
<i>Eremurus spectabilis</i> M. Bieb. XANTHORRHOACEAE	Çiriş, gullik, kiriş	Young plants	Dishes, pies	May-Jun	0.82 (VEGc)	24-18