

## Traditional knowledge on wild plants in Üzümlü (Erzincan-Turkey)

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This survey was conducted in Üzümlü district and its surrounding villages in order to determine the useful plants consumed for different ethnobotanical purposes such as animal fodder, ornamental plant, good, fuel, and dye by the local people living in the area between 2010 and 2011 summer vegetation periods. Totally 77 traditional uses of 64 plant taxa were determined at the end of the study. The biggest families with the numbers of taxa were Fabaceae (10), Asteraceae (9), Rosaceae (6), Salicaceae (4) Brassicaceae, Poaceae, and Liliaceae (3). All parts of 42 plants, stems of 11 plants, flowers of 6 plants, branches of 5 plants, seeds of 3 plants, fruits of 3 plants, aerial parts of 2 plants, fruit exocarp of 2 plants, and root of 1 plant were determined to be used for different purposes. In addition, local names and ethnobotanical aspects of totally 17 taxa (26.5 %) were presented firstly in this study. East Anatolia is a very important region of Turkey in terms of plant diversity, and many studies have been conducted on the traditional uses of plants; but, the least have been carried out in Erzincan province. Because of that, this study was conducted in the area.

**Keywords:** Eastern Anatolia, Erzincan, Local name, Traditional use, Wild plant

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The relationship between plants and people started from the creation of human. Producing oxygen and nutrients is the most important function of plants for human to survive. The use of plants for different purposes such as medicinal, food, spice, dye, tea, construction material, and cosmetic<sup>1,2</sup> in public creates traditional culture of plants<sup>2</sup>. Shinwari & Qaisar<sup>3</sup>, recorded that about 80 % of the world's population have trusted upon the traditional medicine for the treatment of diseases. Especially in developing countries, people trust upon the traditional medicine for many diseases<sup>4</sup>.

Ethnobotanical studies carried out for determining the traditional use of plants have increased in different parts of Turkey and in the world<sup>5-15</sup>. Turkey has a rich flora with about 12000 plant taxa and the number of the endemic taxa is 3649<sup>16-19</sup>. Because of many reasons such as geographical position, climatic differences, topographic structure and habitat diversity, Turkey is the gene center of many economic plants. Only 234 taxa in the flora are cultivated plants, but the rest of them are wilds<sup>20-23</sup>. Üzümlü district is

located in the East part of Erzincan on the South slope of the Keşiş (Esence) mountain (Fig. 1). It takes place in B7 square and in the Irano-Turanian floristic region<sup>20</sup>. Geological formation of the area is mostly serpentine and limestone<sup>20</sup>. Continental climate is seen in the area, and the annual temperature is 6.8 °C in average. The coldest and the warmest months are January and August, respectively<sup>25</sup>.

Eastern Anatolia region of Turkey has a rich ethnobotanical culture, and approximately 150 researches have been performed to determine this diversity. But, Erzincan province has not been studied yet<sup>26-27</sup>. It was also indicated in these studies that new studies should be performed to bring out the traditional culture of the region.

### Materials and methods

Sixty-four useful plant taxa of 29 families were the study materials of this research. The plant samples were collected from the villages of Üzümlü district during the vegetation periods in 2010-2011. More than 100 local people were interviewed to collect ethnobotanical data. Using purposes, local names, used parts, and the methods of usages were

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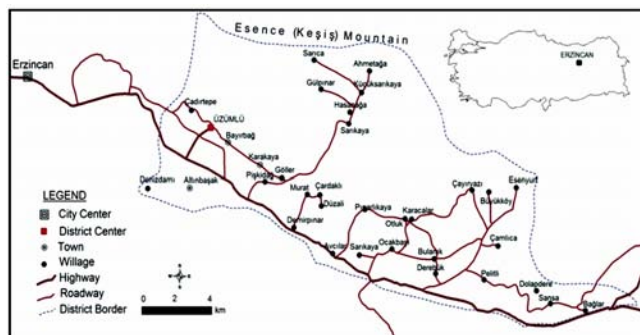


Fig. 1—Location map of Üzümlü district and its villages

determined through face-to-face interviews. The collected plant samples were dried in according to the herbarium techniques. Plant species of the plant samples were determined from Flora of Turkey and The East Aegean Islands<sup>16-19</sup>. The plant samples were stored in Erzincan University Herbarium. The location map of the study area was given in Fig. 1. The ethnobotanical information of the plants were given in Table 1.

## Results and discussion

Plants consumed for different ethnobotanical purposes in the villages of Üzümlü district were investigated in this study. As result of the study, it was determined that different parts of 64 plant species from 29 families were consumed for different purposes in the area (Table 1).

We have conducted face-to-face interviews in order to collect ethnobotanical information. Local names, used parts, preparation methods, and traditional uses were recorded through these interviews (Table 2).

Fabaceae family with 10 species, Asteraceae with 9 species and Rosaceae with 6 species took the first three orders. Among the identified plants, 26 of them were used as animal fodder, 17 were used as ornamental plants, 9 were used for construction of goods, 8 were used as fuel and 4 were used as dye. The other plants were used as religious (3 uses), facial (3 uses), construction material (2 uses), hedge (2 uses), cleaning (1 use), hair care (1 use), and dental care (1 use) (Table 3).

All parts of 42 species, stems of 11 species, leaves of 7 species, flowers of 6 species, branches of 5 species, seeds of 3 species, fruits of 3 species, aerial parts of 3 species, fruit exocarps of 2 species, and roots of 1 species were used.

Fabaceae, Asteraceae, and Rosaceae were the biggest families with a varying ratio from 15.5 % to

9.3. This is not surprising, because they are also the biggest families in the flora of Turkey due to the widely use of their members for ethnobotanical purposes.

Flowers of *Rosa dumalis* Bechst. var. *boissieri* (Crepin) O. Nilsson were used for face-care by nine of the informants. Roots of *Berberis vulgaris* L. were used for dying wool by eight of the informants. All parts of *Anchusa leptophylla* Roemer & Schultes were used as animal fodder by seven of the informants. All parts of *Euphorbia orientalis* L. were used as fuel by seven of the informants (Table 1). Use of *Echinophora* Joub. et Spach for cleaning, *Anthemis cretica* subsp. *iberica* (Bieb.) Grierson for hair care, *Cydonia oblonga* Miller for face care, *Helianthus annuus* L. for milk secretion of animals, *Gypsophilla aucheri* Boiss. as ornamental plant, *Elaeagnus angustifolia* L., *Juglans regia* L., *Plantago media* L., *Malus domestica* Borkh., *Galium margaceum* Ehrend. & Schonb. - Tem, and *Melampyrum arvense* L. var. *arvense* as dye plant were found as different from the uses mentioned in the literature.

Valuable knowledge such as local names, used parts, preparation methods, and uses were collected through face-to-face interviews with about 150 local people. But, many of the women living in the villages avoided from giving their names. Therefore, 57 recorded names were presented in the list of source people. Fifty-one per cent (29 people) of them were living in the villages, 23 % (13 people) in the towns, and 26 % (15 people) in the center of the district. The ages of the informants varied from 35 to 90 yrs and most of them were over 40 yrs old. The age of the youngest informant was 35 and the oldest was 90. It is determined that 70 % of them were over the age of 50 (Table 2).

Some interesting uses of the plants were determined. *Helianthus annuus* was used as animal fodder, fuel and for increasing the milk secretion of animals. *Berberis vulgaris* roots were used as a dye for wool. Growing *Elaeagnus angustifolia* three in the garden is believed to bring good luck for the household. Most of the determined species of Fabaceae were used as animal fodder. *Juglans regia* has three uses including hair dye, dress dye, and dental care. Leaves of *Plantago media* were used to make toys by children. Seeds of *Cydonia oblonga* were used for face-care and the fruit was used for beauty of children by pregnant women. Fruits of *Fragaria vesca* were also consumed by pregnant

Table 1—Local names, used parts and ethnobotanical uses of the plants (*contd.*)

Family / Plant species	Local name	Used part	Using aim and usage
<b>Apiaceae</b>			
<i>Echinophora tournefortii</i> Joub. et Spach	<i>Çortik</i>	Leaves	Cleaning: People use the plants for cleaning the spines adhering to their dresses.
<b>Apocynaceae</b>			
<i>Trachomitum venetum</i> (L.) Woodson subsp. <i>sarmatiense</i> (Woodson) Avestisian	—	Flowering branches	Ornamental: The flowering branches are placed in vases.
<b>Asteraceae</b>			
<i>Anthemis cretica</i> L. subsp. <i>iberica</i> (Bieb.) Grierson	<i>Beyaz papaty</i>	Flowering branches	Hair care: Flowering branches are boiled and the hair is washed with this water as decolorizing.
<i>Artemisia austriaca</i> Jacq.	<i>Palak, Süpürge otu</i>	Stems, leaves	Good: Used to make broom.
<i>Carduus pycnocephalus</i> L.	<i>Eşek diken</i>	All parts	Animal fodder: Pounded and mixed with straw.
<i>Centaurea virgata</i> Lam.	<i>Pıtrak</i>	All parts	Animal fodder.
<i>Cota tinctoria</i> L. var. <i>tinctoria</i>	<i>Sarı papaty</i>	All parts	Animal fodder.
<i>Cyanus depressus</i> (M.Bieb.) Soják	<i>Peygamber çiçeği</i>	All parts	Animal fodder. Ornamental.
<i>Helianthus annuus</i> L.	<i>Ayçiçeği</i>	Seeds, all parts All parts	Animal fodder: Increase milk secretion. Fuel.
<i>Taraxacum officinale</i> Web.	<i>Sarıçiçek</i>	All parts	Animal fodder.
<i>Xeranthemum annuum</i> L.	<i>Süpürge otu, Dağ karanfili</i>	Aerial parts	Good: Used to make broom. Animal fodder.
<b>Berberidaceae</b>			
<i>Berberis vulgaris</i> L.	<i>Karamuk</i>	Roots	Dye: The dye produced by boiling the root is used to dye wool.
<b>Boraginaceae</b>			
<i>Anchusa leptophylla</i> Roemer & Schultes	<i>Mor çiçek</i>	All parts	Animal fodder.
<i>Heliotropium circinatum</i> Griseb.	—	All parts	Animal fodder.
<b>Brassicaceae</b>			
<i>Arabis caucasica</i> Willd.	-	All parts	Ornamental: Grown for ornamental purposes.
<i>Capsella bursa-pastoris</i> (L.) Medik	<i>Çoban çantası</i>	Leaves, flowers	Animal fodder.
<i>Descurainia sophia</i> (L.) Webb ex Prantl	<i>Süpürge otu</i>	Stem, leaves	Good: Used to make broom.
<b>Caprifoliaceae</b>			
<i>Lonicera etrusca</i> Santi	<i>Hanumeli</i>	All parts	Ornamental: Grown as ornamental plant.
<b>Caryophyllaceae</b>			
<i>Gypsophilla aucheri</i> Boiss.	-	All parts	Ornamental: placed in vases
<b>Convolvulaceae</b>			
<i>Convolvulus arvensis</i> L.	<i>Sarmaşık</i>	Leaves	Animal fodder.
<b>Elaeagnaceae</b>			
<i>Elaeagnus angustifolia</i> L.	<i>İğde</i>	All parts	Belief (religious): Growing the tree in the garden is believed to bring good luck.
<b>Euphorbiaceae</b>			
<i>Euphorbia orientalis</i> L.	<i>Sütleğen</i>	All parts	Fuel.
<b>Fabaceae</b>			
<i>Astragalus karamasicus</i> Boiss. & Bal.	<i>Yabani korunga</i>	All parts	Animal fodder.
<i>Astragalus microcephalus</i> Willd.	<i>Geven</i>	All parts All parts	Fuel Animal fodder: Pounded and mixed with straw.
<i>Colutea cilicica</i> Boiss. & Ball.	<i>Akasya</i>	All parts	Ornamental.
<i>Coronilla orientalis</i> Miller var. <i>orientalis</i>	—	All parts	Animal fodder.

*(contd.)*

Table 1—Local names, used parts and ethnobotanical uses of the plants (*contd.*)

Family / Plant species	Local name	Used part	Using aim and usage
<i>Coronilla varia</i> L. subsp. <i>varia</i>	<i>Yabani korunga</i>	All parts	Animal fodder.
<i>Lotus corniculatus</i> L. subsp. <i>alpinus</i> Ser.	–	All parts	Animal fodder.
<i>Melilotus officinalis</i> (L.) Desr.	<i>Sarıyonca</i>	All parts	Animal fodder.
<i>Onobrychis cana</i> Boiss.	<i>Gorunga</i>	All parts	Animal fodder.
<i>Onobrychis galegifolia</i> Boiss.	<i>Sarı korunga</i>	All parts	Animal fodder.
<i>Trifolium pratense</i> Schreb.	<i>Kepenek otu</i>	All parts	Animal fodder.
Fagaceae			
<i>Quercus libani</i> Olivier	<i>Meşe</i>	Stem, branches	Fuel: It is preferred because of not giving smut.
<i>Quercus pubescens</i> Willd.	<i>Meşe</i>	Stem, branches	Fuel.
Iridaceae			
<i>Iris persica</i> L.	<i>Zambak</i>	All parts	Ornamental: Planted in the gardens.
Juglandaceae			
<i>Juglans regia</i> L.	<i>Ceviz</i>	Fruit exocarps	Dye: Fruit exocarp is boiled in the water applied to the hair by women, The water is mixed with henna and applied to the hair. Dye: Used to dye a local dress called ihram. Dental care: Fruit exocarp is applied to the teeth for brightening their color.
Lamiaceae			
<i>Lamium garganicum</i> L.	–	All parts	Animal fodder.
<i>Teucrium orientale</i> L. var. <i>glabrescens</i> Hausskn ex Bornm.	–	All parts	Ornamental: Grown in the gardens.
Liliaceae			
<i>Muscari neglectum</i> Guss.	<i>Sümbül</i>	All parts	Ornamental: Grown in the gardens.
<i>Muscari tenuiflorum</i> Tausch.	<i>Mor sümbül</i>	All parts	Ornamental: Grown in the gardens.
<i>Tulipa julia</i> C. Koch	<i>Lale</i>	All parts	Ornamental: Grown in the gardens.
Malvaceae			
<i>Alcea calverti</i> Boiss.	<i>Hatmi çiçeği</i>	All parts	Ornamental: Grown in the gardens and road sides.
Nyctaginaceae			
<i>Mirabilis jalapa</i> L.	<i>Akşam sefası</i>	All parts	Ornamental: Grown in the gardens and houses as ornamental plant.
Oleaceae			
<i>Syringa vulgaris</i> L.	<i>Leylak</i>	All parts Flowers	Ornamental: Grown in the gardens. Perfume: Dried flowers are placed in hope chests and at the corners of the rooms.
Onagraceae			
<i>Epilobium hirsutum</i> L.	–	All parts	Animal fodder: Pounded and mixed with straw.
Plantaginaceae			
<i>Plantago media</i> L.	<i>Bağa yaprağı</i>	Leaves	Good: The children use the petioles to make toy baskets.
Poaceae			
<i>Avena sativa</i> L.	<i>Yulaf</i>	All parts	Animal fodder.
<i>Hordeum vulgare</i> L.	<i>Arpa</i>	All parts, seeds	Animal fodder.
<i>Phragmites australis</i> (Cav.) Trin. ex Steudel	<i>Kamış</i>	Stem, branches	Good: Stems and branches are used to make garden pillows. Good: Branches are used to make baskets. Construction material: Used to make ceiling of vineyard houses.

(contd.)

Table 1—Local names, used parts and ethnobotanical uses of the plants

Family / Plant species	Local name	Used part	Using aim and usage
Ranunculaceae			
<i>Ranunculus repens</i> L.	<i>Düğün çiçeği</i>	All parts	Ornamental: Grown in the gardens.
Rosaceae			
<i>Armeniaca vulgaris</i> Lam.	<i>Kayısı</i>	Stem, branches	Fuel.
<i>Cydonia oblonga</i> Miller	<i>Ayva</i>	Seeds	Face care: Seeds are waited in the water for a day and this water is used for face care.
		Fruits	Belief (religious): Eaten by pregnant women for the beauty of the children.
<i>Fragaria vesca</i> L.	<i>Çilek</i>	Fruits	Belief (religious): Eaten by pregnant women for increasing the intelligence of the children.
<i>Malus domestica</i> Borkh.	<i>Elma</i>	Fruits	Face care: Inner sides of the fruit exocarps are applied to the face.
		Stem, branches	Fuel.
<i>Rosa dumalis</i> Bechst. var. <i>boissieri</i> (Crepin) O. Nilsson	<i>Kuşburnu</i>	Flowers	Face care: The flowers are waited in the water and this water is used to clean the face.
<i>Rosa canina</i> L.	<i>Gül</i>	All parts	Ornamental: Grown in the gardens and parks. Hedge: Planted in the gardens as hedge.
Rubiaceae			
<i>Galium boreale</i> L.	-	All parts	Animal fodder.
<i>Galium margaceum</i> Ehrend. & Schonb. - Tem	-	Floewing branches	Ornamental: The flowering branches are collected and placed in vases.
Salicaceae			
<i>Populus alba</i> L.	<i>Kavak</i>	Stem, branches	Good: Used for making fruit and vegetable chests. Construction material: Used for construction mold material, staircase, and ceiling.
<i>Populus nigra</i> L.	<i>Kavak</i>	Stem, branches	Fuel.
<i>Populus tremula</i> L.	<i>Kavak</i>	Stem, branches	Fuel.
<i>Salix viminalis</i> L.	<i>Söğüt</i>	Branches	Good: Young branches are used to make broom. Good: Used to make Rapata which is used for cooking a local bread.
Scrophulariaceae			
<i>Melampyrum arvense</i> L. var. <i>arvense</i>	<i>Pişmez</i>	All parts, Flowers	Animal fodder. Dye: A dye produced from the flowers is used to dye a local wear Ihram.
Tamaricaceae			
<i>Tamarix smyrnensis</i> Bunge.	<i>Yılğın ağacı</i>	Branches with leaves	Hedge: Used to make hedge in the gardens.

women for increasing IQ of the children. *Melampyrum arvense* were used as dye of a traditional dress called as Ihram or Ehram (Table 1).

Sadikoğlu & Alpınar<sup>28</sup> stated that the total number of ethnobotanical studies conducted in Eastern Anatolia region was 89 in 2004. Polat *et al.*<sup>27</sup> reported that this region was the second most important region of Turkey with its 487 endemic plant taxa after the Mediterranean region. A total of 147 researches have been conducted in the Eastern Anatolia region since 2012. Faydaoğlu & Sürücüoğlu<sup>2</sup> researched the history related to the use of medical and aromatic

plants, and their importance in the economy. Özüdoğru *et al.*<sup>29</sup> studied the traditional utilization of 100 wild plant taxa in some selected sites of Sivas and Yozgat. Öztürk & Özçelik<sup>30</sup> determined the ethnobotanical information of 136 plant species popularly used in Eastern Anatolian Region. Doğan<sup>35</sup> mentioned that Turkey has an extraordinarily flora, and a great traditional knowledge on ethnobotanical culture.

Polat *et al.*<sup>27</sup> stated that Erzincan was ordered as 57<sup>th</sup> in terms of economic development. Erzincan's economy mostly depends upon agriculture and animal

Table 2—Information about the source persons

Character		Number	Percentage (%)
Sex	M	41	71.9
	F	16	28.1
Age	< 30	0	0.0
	30-40	5	8.8
	41-50	12	21.0
	51-60	15	26.2
	61-70	20	35.2
	70 <	5	8.8

Table 3—Using purposes of the plants and the number of use

No.	Using purpose	Number of use	Percentage (%)
1	Animal fodder	26	33.8
2	Ornamental plant	17	22.1
3	Good	9	11.7
4	Fuel	8	10.3
5	Dye	4	5.2
6	Belief, religious	3	3.9
7	Facial	3	3.9
8	Construction material	2	2.6
9	Hedge	2	2.6
10	Cleaning	1	1.3
11	Hair care	1	1.3
12	Dental care	1	1.3
	Total	77	100

husbandry. Some floristical studies have been conducted around Erzincan province. Saltabaş & Zengin<sup>32</sup> determined wild species growing in bean fields of Erzincan. Kandemir & Türkmen<sup>33</sup> and Yıldırım<sup>34</sup> carried out two floristical studies in the province of Erzincan. Yücel *et al.*<sup>35</sup> pointed out the food plants and traditional foods of Kemaliye district. Korkmaz *et al.*<sup>36</sup> determined the plant taxa used to prepare Zetrin spice in Kemaliye region.

*Taraxacum officinale* which was determined to be used as animal fodder in our study area was noted to be used for analgesic, anorexia, appetizer, astringent, bitter, depurative, digestive and urinary disorders, and diuretic in the study of Çakılcıoğlu *et al.*<sup>37</sup> *Melilotus officinalis* which was used as animal fodder before has recently been used for antiinflammatory, antiseptic, aphrodisiac, arthritis, astringent, depurative, diuretic, gut, hepatitis, hepatoprotective, joint pain, kidney stones, leucorrhoea, renal lithiasis, uterine disorders, and wound healing. *Astragalus microcephalus* which was used as fuel in the study area was also determined to be used for the same purpose in Ilica district<sup>38</sup>. It was noted in the same study that *Phragmites communis* Trin. was called as

‘Sümbül’ and used as an ornamental plant. But in our study area, *Phragmites australis* was called as *Kamış* and used to make goods and as construction material. *Salix viminalis* was found to be used for similar purposes in both studies. *Heliotropium circinatum* which was used as fuel in our study area was determined to be used for cancer in Ovacık area according to the study carried out by Tuzlacı & Doğan<sup>39</sup>. In this study, *Iris caucasica* Hoffm. subsp. *turcica* and *I. sari* Schott ex Baker were mentioned to be used for cold. One species of the genus (*Iris persica*) was used for ornamental purpose in our study area. Özüdoğru *et al.*<sup>29</sup> noted that *Coronilla orientalis* var. *orientalis* was used for cold as tea around Sivas and Yozgat, but it was used as fuel in our study area. Fruits of *Quercus pubescens* have been eaten or used as wool dye as being different from the use as fuel mentioned in our study.

Fifteen taxa including *Helianthus annuus* (animal fodder), *Xeranthemum annuum* (used to make broom), *Berberis vulgaris* (wool dye), *Capsella bursa-pastoris* (animal fodder), *Elaeagnus angustifolia* (belief), *Juglans regia* (dye and dental care), *Lamium garganicum* (animal fodder), *Alcea calverti*, *Hordeum vulgare*, (animal fodder), *Armeniaca vulgaris* (fuel), *Cydonia oblonga* (face care and belief), *Fragaria vesca* (belief), *Malus domestica*, (face care and fuel), *Rosa dumalis* var. *boissieri* (face care), and *Rosa canina* (ornamental) that were determined to be used for different purposes were also specified to be consumed as food in the study area. *Anthemis cretica* subsp. *iberica*, *Berberis vulgaris*, *Elaeagnus angustifolia*, *Euphorbia orientalis*, *Juglans regia*, *Alcea calverti*, *Plantago media*, *Hordeum vulgare*, *Armeniaca vulgaris*, *Cydonia oblonga*, *Rosa dumalis* var. *boissieri*, and *Rosa canina* were some of the plants included our study which were also used as medicinal plants in Üzümlü area.

A total of 147 ethnobotanical researches were conducted in the Eastern Anatolian Region of Turkey, but Erzincan province has not been studied yet<sup>23</sup>. Traditional uses of natural plants as folk medicine, food, animal fodder and ornamental plants have been continuing in the region popularly. The people living in the region mostly collect those plants from mountains and around the villages. Some of the female informants we conducted face-to-face oral interview avoided from mentioning their names. We concluded that this can be arisen from the special

culture of the population and the terror problem experienced in the past for a long period in the region. Determining the ethnobotanical information related to the use of plants for different purposes in the province is very necessary for coming generations and for preventing the loss of the traditional culture. This study is not only important for chemists studying on the chemical contents, antioxidant and antimicrobial capacities of plants, but also important for horticulture, animal husbandary, medicine, fuel and dye industries.

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