

Edible *Allium* L. species that are sold as fresh vegetables in public bazaars of Hakkâri province and its surroundings in Turkey

Mehmat FIRAT^{1*}, Akın AZİRET²

¹Yüzüncü Yıl University, Faculty of Education, Biology Section, 65080, Van/Turkey.

²Firat University, Keban Vocational Schools, Department of Environmental Protection, Keban-Elazığ/ Turkey.

*Corresponding author: kuyucak65@yahoo.com

Abstract: The material of this study comprises observations of 9 *Allium* L. species between 1999 and 2014 which are sold in public bazaars of Hakkâri province; Yüksekova, Şemdinli and Çukurca districts, and Derecik town in Spring, and of the floristic field surveys in and around Hakkari which is located in the C9, C10 squares according to the grid square system in the Flora of Turkey. Green leaves of these species are sold in the markets of the region commonly, which are; *Allium akaka* S. G. Gmel. ex Schult. & Schult., *Allium calocephalum* Wendelbo, *Allium noeanum* Reut. ex Regel, *Allium rhetoreanum* Nab., *Allium schoenoprasum* L., *Allium shatakiense* Rech. f., *Allium szovitsii* Regel, *Allium vineale* L., *Allium scorodoprasum* L. subsp. *rotundum* (L.) Stearn. This study provides information about the natural habitats of the 9 species of the genus *Allium* in Turkey, and gives information with photos about how they are collected, dried, marketed, and used in detail.

Keywords: *Allium*, Public Bazaar, Hakkâri, Turkey.

Introduction

The genus *Allium* is represented with 179 species in Turkey (Güner et al., 2012). There are more than 800 species in the World evaluated under the genus *Allium* (Fritsch et al., 2010). Species within the genus *Allium* is divided into sections. *Allium* is a plant genus that contains onion, garlic and leek species. The members of this genus comprise the species smell garlic in head and onion parts generally spread in the area of eastern Europe and western Asia in the northern hemisphere (Pavlovic et al., 2003). In Turkey, some locally consumed *Allium* species are called by names such as; Körmen, Kaya sarımsağı, Yabani sarımsak, Yabani soğan, İt soğanı and Çoban sarımsağı, and they are used for therapeutic purposes or nutrient (Günay, 1983). *Allium akaka*; the whole plant is mixed in cheese (Özçelik, 1992). The leaves and tubers are used instead of the onion in Erzurum and Van (Güner et al, 2012) and this species are used instead of fresh onion and are stored as food for winter and mixed in the cheese (Öztürk et al., 2000). *Allium ampeloprasum*; root is boiled in water and its juice is drunk (Tuzlacı et al., 1996). Young leaves are used like garlic (Güner et al, 2012). The leaves are eaten fresh (Sharp et al, 2002; Yavuz, 2003; Ertuğ,

2004b). The entire plant with onion is unearthed. After cleaning the plant, it is mixed in salads as a vegetable like green onion (Arık, 2003; March, 2006). Plant leaves and onion are used instead of garlic. For meal, the fresh leaves of the plant are boiled in hot water and eaten with yogurt (Koyuncu, 2005). Bees take plant nectar and pollen (Roe, 2008). *Allium scorodoprasum* subsp. *rotundum*; the whole plant is mixed in in cheese (Silver, 1994). Tubers are eaten with yogurt, cheese and bread as an antiseptic, appetizing, chlorothiazide and diuretic (Özçelik, 1992). The fried leaves and onions are used as roborant and nutritious (Tuzlacı et al., 1996). It is used in the making of "Herby cheese", and is consumed as a spice and vegetable (Öztürk et al, 2000). The leaves are eaten fresh (Sharp et al., 2002). Animals do not consume this plant (Ertuğ, 2003). The fresh leaves are mixed in cooking. Its flower seeds are used as decorative (Koçyiğit, 2005). 14 species of the genus *Allium* were given with images in their natural habitats, also images of the collection, drying and marketing processes were given (Firat, 2015).

Materials and Methods

The material of this study comprises observations of nine

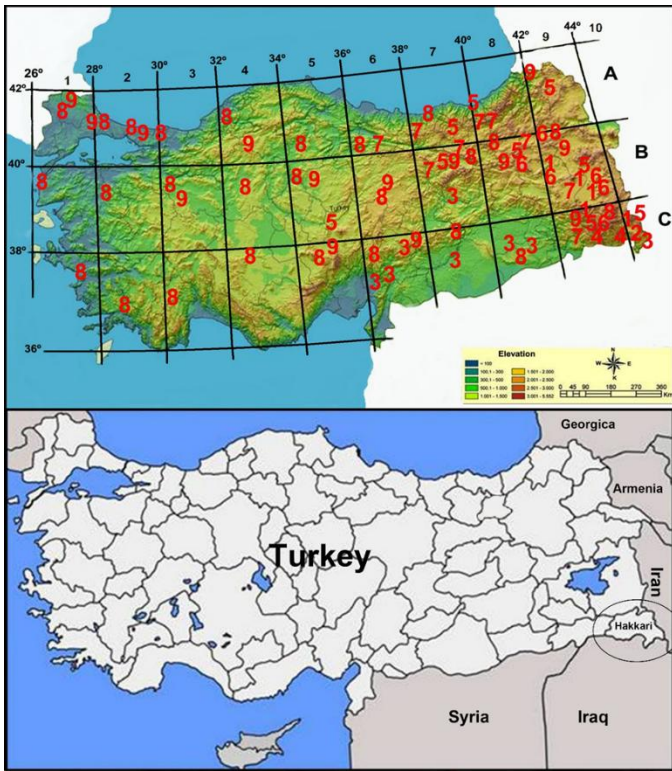


Figure 1. Distribution map of *Allium* species in Turkey and location of Hakkari (in circle). 1. *A. akaka*, 2. *A. calocephalum*, 3. *A. noeanum*, 4. *A. rhetoreanum*, 5. *A. schoenoprasum*, 6. *A. shatakiense*, 7. *A. szovitsii*, 8. *A. vineale*, and 9. *A. scorodoprasum* subsp. *rotundum*

Allium L. species between 1999 and 2014 which are sold in collected between 1999 and 2014; public bazaars of Hakkari Province; Yüksekova, Şemdinli and Çukurca districts, and Derecik town in spring, and of the floristic field surveys in and around Hakkari which is located in the C9, C10 squares according to the grid square system in the flora of Turkey (Fig. 1). *Allium* species, which are used for food purposes in daily life, have been identified. For this process, the information has been obtained from the public and the pictures were taken in the public market. Local names of plants have been recorded with public information (Firat, 2013). Along with the information completed, the plants have been observed in the field by going into habitats where the plants are grown in populations. As a result of these observations of species of macro and micro detailed pictures were taken.

Plant samples have been collected in the field and pressed in accordance with the herbarium rules and onion samples were taken, then local information and population observations were recorded carefully. Samples are stored in the collection of Mehmet Firat to create herbarium in the future. Recent taxonomic information, diagnosis and

distribution information of the species have been saved from the Flora of Turkey and the East Aegean Islands and List of Turkish Flora books. (Davis, 1984; Güner et al., 2012).

Results and Discussion

Many species from the genus *Allium* are collected in the province of Hakkâri in the spring and consumed as food. Some fresh parts of plant aboveground are collected by women in the nature and used for daily consumption and some of it for winter consumption and also sold in the public market. Fresh onion leaves can be sold to 5-10 Turkish Liras per kilogram. A woman who sells approximately 20-40 kilos daily product contributes to the family budget average one month in this way. Annual average of 200 tons of fresh onions is consumed in Hakkâri.

These species and their consumption by public, *Allium akaka*; daily fresh leaves are consumed as vegetable. Fresh and dry onions are used by participating in rice. Also, they are grown in garden for daily consumption. People plant the removed onions in their gardens in spring and then consume leaves as daily vegetable. It is used in various dishes. It is rarely sold in the market. The local name is "Guhbizing".

Allium calocephalum; its daily fresh leaves are consumed as vegetable. In winter the leaves are dried and mixed in rice for dinner. This plant which is a new record in recent years in our country is the most consumed plant in the Derecik region. It is sold in the Derecik public market. The local name is "Luz".

Allium noeanum; the leaves are used as a vegetable while fresh. It is of the species that is rarely sold in the market. It is rarely collected because it is widely grown in the field of agriculture. The local name is "Sîrmok".

Allium rhetoreanum; the young leaves in the spring are consumed as daily vegetable and mixed in rice dishes. The fresh leaves of the plant collected are chop and dried, and then stored for the winter. Its sauced meal is cooked in winter. Also the dried leaves of plant are mixed in rice dishes. In spring, people plant the removed onions from nature in their gardens and use its leaves as daily vegetable. This species is very rare endemic in Hakkâri region which is the most widely consumed and sold in the market. The leaves of the plant are very wide and because of its flavor it is consumed too much. The local name is "Luş".



Figure 2. 1. *Allium akaka*, 2. *A. calocephalum*, 3. *A. noeanum*, 4. *A. rhetoreanum*, 5. *A. schoenoprasum*, 6. *A. shatakiense*, 7. *A. szovitsii*, and 8. *A. scorodoprasum* subsp. *rotundum* (Original).

Allium schoenoprasum; fresh leaves are consumed as a vegetable. Also it is the best sweetener plant that is mixed in the famous "Herby cheese". When the leaves are

fresh, they are chopped and mixed in the pastry. People remove onions from nature and plant them in their gardens



Figure 1. 1. *Allium vineale*, 2. *A. rhetoreanum* beet sold in of public-market, 3. *A. shatakense* beet sold in of public-market, 4. *A. schoenoprasum* beet sold in of public-market, 5. *A. vineale* beet sold in of public-market, 6. A figure of public-market, 7. Women picking up leaves and onions on plateau, and 8. A man is chopping *A. rhetoreanum* (Original)

and in spring they consume the fresh leaves as a daily vegetable. In the market it is one of the most sold species

because it is collected easily and is found in the high mountainous areas intensively in Hakkâri. The local name

Table 1. Local names, usage parts and distribution in Turkey wild *Allium* species in Hakkâri

Taxa	Local name in Kurdish (K) and Turkish (T)	Usage parts	Distribution in the province of Turkey
<i>Allium akaka</i>	Guhbizing (K) Yer soğanı (T)	leaf, stem, bulb, flower	Erzurum, Bitlis, Muş, Ağrı, Van, Hakkâri, Siirt
<i>Allium calocephalum</i>	Luz (K) Püskül soğanı (T)	leaf, stem	Hakkâri
<i>Allium noeanum</i>	Sîrmok (K) Ekin soğanı (T)	leaf, stem	Elazığ, Şanlıurfa, Hatay, Gaziantep, Diyarbakır, Mardin, Hakkâri
<i>Allium rhetoreanum</i>	Luş (K) Hakkâri soğanı (T)	leaf, stem	Hakkâri
<i>Allium schoenoprasum</i>	Sîrîk (K) Peynir sirmosu (T)	leaf, stem	İçel, Gümüşhane, Kars, Rize, Tunceli, Erzurum, Van, Hakkâri
<i>Allium shatakiense</i>	Çûrîn (K) Çatak soğanı (T)	leaf, stem	Van, Hakkâri
<i>Allium szovitsii</i>	Sîrîk (K) Yayla körmene (T)	leaf	Bolu, Ankara, Sivas, Gümüşhane, Kars, Kütahya, Kayseri, Kahraman Maraş, Erzincan, Erzurum, Isparta, Ağrı, İçel, Diyarbakır, Hakkâri
<i>Allium scorodoprasum</i> subsp. <i>rotundum</i>	Kurat (K) Deli pırasa (T)	leaf, stem, bulb	Kırklareli, İstanbul, Bolu, Çankırı, Çorum, Sivas, Trabzon, İzmir, Kütahya, Eskişehir, Ankara, Kayseri, Kahraman Maraş, Erzincan, Erzurum, Ağrı, Muğla, Antalya, Adana, Hatay,
<i>Allium vineale</i>	Sirmo (K) Sirmo (T)	leaf, stem	Edirne, Kırklareli, İstanbul, Ankara, Eskişehir, Kayseri, Malatya, Kahraman Maraş, Erzurum, Niğde, Erzincan, Van, Hakkâri

is "Sîrîk".

Allium shatakiense; fresh leaves are consumed as vegetable. When the leaves are fresh, they are chopped and mixed in the pastry. People remove onions from nature and plant them in their gardens and in spring they consume the fresh leaves as a daily vegetable. This plant is regional endemic which is one of the best-sold plants in the market. Its flavor is high and consumed in "Herby cheese". The local name is "Çûrîn".

Allium szovitsii; its fresh leaves are consumed as vegetable. Also it is the best sweetener plant that is mixed in the Van's famous Otlu cheese. People remove onions from nature and plant them their gardens and in spring they consume fresh leaves as a daily vegetable. It is sold in the market. The local name is "Sîrîk".

Allium vineale; the brine is made of the flowering tops of the plant and mixed in cheese. The people of the region consume it as an antibacterial in the cheese. It is sold in the market. The aroma of plant is very strong. The local name is "Sirmo".

Allium scorodoprasum subsp. *rotundum*; this plant is collected from the mountains, when the leaves and ground

parts are fresh. Then, firstly cut into small pieces and the brine is made of it by boiling it in the water slowly. Also it is mixed in "Herby cheese". The local name is "Kurat".

In nature this species is collected without controlled so in the future we can see this species among the endangered species. So, people should be trained by the experts. Also, every year, onions or aboveground parts shouldn't be collected in the same area. For the strong growth of onion, they shouldn't be removed for at least one year.

References

- Arık M. 2003. Useful Plants of Korkut (Muş) Province and Its Countries (Korkut (Muş) İlçesi ve Köylerinin Faydalı Bitkileri). Yüzüncü Yıl University. Institute of Natural and Applied Sciences, Van, MSc Thesis. (In Turkish)
- Baytop T. 1999. Treatment with Plants in Turkey: Past and Present (Türkiye'de Bitkilerle Tedavi Geçmiste ve Bugün). Nobel Tıp Kitapevleri Limited Company, İstanbul. (In Turkish)
- Davis P.H. 1984. Flora of Turkey and East Aegean Islands, Vol. 8. Edinburgh University Press. Edinburgh.
- Ertuğ F. 2003. Vegetable Culture in Bodrum cuisine: I. Edible Natural Vegetables, Research on Turkish Cuisine Culture

- (Bodrum Mutfağında “Ot Kültürü”: I Yenen Doğal Otlar Türk Mutfak Kültürü Üzerine Araştırmalar). I. Edible Natural Vegetables, Research on Turkish Cuisine Culture, 10: 49-70. (In Turkish)
- Ertuğ F. 2004. Wild Edible Plants of Bodrum Area (Muğla, Turkey), Turkish Journal of Botany, 28: 161-174.
- Firat M. 2013. Dictionary of Plant Names in Kurdish (Fehenga Navên Riwekên Bi Kurdî/Kürtçe Bitki Adları Sözlüğü) Kalkan Ofset, Ankara, 652p. (In Kurdish and Turkish)
- Firat M. 2015. The Ethnobotanical Usage of Some East Anatolian (Turkey) *Allium* L. Species. Manas Journal of Agriculture and Life Science, 5: 80-86.
- Fritsch R.M., Blattner F.R., Gurushidze M. 2010. New classification of *Allium* L. subg. *Melanocrommyum* (Webb & Berthel) Rouy (Alliaceae) based on molecular and morphological characters. Phytion, 49: 145-220.
- Gümüş İ. 1994. The Local Names and Uses of Some Usefull Plants Grow in Ağrı Province (Ağrı Yöresinde Yetişen Bazı Faydalı Bitkilerin Yerel Adları ve Kullanışları). Turk. J. of Bot., 18; 107-112. (In Turkish)
- Günay A. 1983. Vegetables (Sebzecilik). Volume II. Çağ Printing House, Ankara. (In Turkish)
- Güner A, Aslan S, Ekim T, Vural M, Babaç M.T. (eds.) 2012. Turkey's Plant List (Vascular Plants) (Türkiye Bitkileri Listesi (Damarlı Bitkiler). Nezahat Gökyiğit Botanic Garden and Flora Research Society Publication, İstanbul. (In Turkish)
- Karaca A. 2008. Useful Plants for Honey-bees (*Apis mellifera* L.) and their Properties in Aydın Province (Aydın Yöresinde Bal Arılarının (*Apis mellifera* L.) Yararlanabileceği Bitkiler Ve Bazı Özellikleri). Journal of ADÜ Agriculture Faculty, 5:39-66. (In Turkish)
- Keskin M., Alpınar K. 2002. An ethnobotanic research on Kışlak (Yayladağı/Hatay) (Kışlak (Yayladağı/Hatay) Hakkında Etnobotanik Bir Araştırma). OT Sist. Bot. Der., 9: 91-100. (In Turkish)
- Koçyiğit M. 2005. An Etnobotanic Research in Yalova. (Yalova İlinde Etnobotanik Bir Araştırma). İstanbul University. Health Science Institute, MSc Thesis. (In Turkish)
- Koyuncu O. 2005. Floristic and Ethnobotanic Investigation of Geyve (Sakarya) (Geyve (Sakarya) Floristik ve Etnobotanik Açidan İncelenmesi). Eskişehir Osmangazi University, Institute of Natural and Applied Sciences PhD Thesis. (In Turkish)
- Mart S. 2006. Ethnobotanic Investigation of Natural Plants of Bahçe and Hasanbeyli (Osmaniye) (Bahçe ve Hasanbeyli (Osmaniye) Halkın Kullandığı Doğal Bitkilerin Etnobotanik Yönden Araştırılması). Çukurova University. Institute of Natural and Applied Sciences, MSc Thesis, Adana. (In Turkish)
- Özçelik H. 1992. On the Herbal Cheese from East Anatolia (Turkey). J. of Eco. Bot., New York Botanical Garden, Bronx, NY 10458.
- Öztürk A., Öztürk S., Kartal S. 2000. The Properties and Uses of Plants in Van Herby Cheese (Van Otlı Peynirlerine Katılan Bitkilerin Özellikleri ve Kullanışları). OT Sist. Bot. Der., 7: 167-179. (In Turkish)
- Pavlovic N., Zdravkovic J., Cvikic D., Stenovic D. 2003. Genetic divergence of cultivated ecotypes of spring garlic within the territory of Yugoslavia.
- Tuzlacı E., Yazıcıoğlu A. 1996. Folk Medicinal of Trabzon (Turkey). Fitoterapia, 67: 307-318.