



## A Study on the traditional usages of woody plants in Derdin village / Düzce (Turkey)

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### Abstract

This study shows the tools made from locally used woody plants found during the ethnobotanical research of Derdin, an Abkhaz village of Düzce province established after migration from the Caucasus to Anatolia. Local names, usages, and the frequency of use, of the woody plants were recorded. Woody plants whether naturally grown or cultivated are used to create tools that can be found in social life, farm equipment, kitchen, and architecture. Thirty-three woody plant taxa belonging to 18 families were identified scientifically that is used by people of the area. Plant taxa are grouped according to their usage areas. According to data gathered, the plant families that are sorted by the intensity of the use are Rosaceae, Pinaceae, and Fagaceae families, respectively. As a result of the evaluation, the majority of the woody plants are used for more than one purpose.

**Keywords:** Ethnobotany, Düzce, Woody Plants, Abkhazian, Karadeniz Province

### Introduction

People used plants for various purposes for centuries and accumulated experience on them. These experiences, accumulated over time, have been transferred from generation to generation to create a botanical culture. Up to today humans have developed and increased their experiences that resulted in formations of bonds between man and plants naturally. As a result of this centuries-old bond between humans and plants, the ethnobotanical discipline has emerged, which was adopted by the whole planet and significant research has been made (Baytop 1984).

Besides its rich plant diversity, Turkey was home to many civilizations thus knowledge of plant usage is very well established. It is very important that the usage information of plants passed on from generation to generation is written down without being lost until today. This knowledge which show Turkey's rich ethnobotanical culture are documented and are being researched under the guidance of the modern sciences for future generations to come (Sadıkođlu and Alpınar 2000).

The woody plants are widely used by people in a varying range of fields. Depending on the flora of the living area, the tools differ between regions. Therefore, woodworking is carried out more where forests are abundant and tree species are high in numbers. Since Düzce province has wide and abundant forest areas also with rich flora, the rate of using woody plants is quite high (Aksoy et al. 2016).

A great number of researches has been done about morphological, anatomical, and industrial uses that are related to woody plant species from past to present. However, research on the ethnobotanical features of woody plant species is extremely limited. Studies conducted in the vicinity of the research

area have been evaluated mainly from a floristic point of view (Aksoy 2006, Aksoy 2018, Koçer 2012, Koçer and Aksoy 2016, Özkan and Aksoy 2011).

In this study, how woody plant species are processed in woodwork workshops and for what purposes they use woody plants are researched from the people whom are involved in woodworking in Derdin Village of Düzce Province. Purpose of this study is to determine the local and scientific names, to review, to evaluate and record ethnobotanical aspects of woody plants used by the local people of Abkhazian origin, who migrated from North Caucasus to Düzce and are known to give great importance to their traditions and cultures, in establishing a new settlement in Düzce Derdin village.

## **Material and Methods**

### **Study area**

The physical field of study is Derdin Village which is located in the Western Black Sea providence, southeast of the city of Düzce and 25 kilometers away from downtown of Düzce (Figure 1). The size of the field of study is 300 hectares. The average height above the sea level of the village is 850 meters. According to the square system of P. H. Davis, it is located in the A3 square. This square is generally under the influence of Euro-Siberian flora region that covers the northwest of Black Sea providence and the Mediterranean flora (Aksoy et al. 2016).

Düzce is located in the western Black Sea providence in the lesser rainy area of the Black Sea climate. The total amount of rain received results in the continuity of the greenness in the area. According to the statistics taken from the meteorology station of Düzce, the average temperature is 13°C and the annual rain is 840 mm (Aksoy et al. 2014). However, Derdin village, the field of this study, is located 700 meters higher than downtown of Düzce and for this reason, receives more rain on average and has a lower degree Celsius. Winter season is therefore harsher.



Figure 1. Derdin Village (URL-1)

### **Study area history**

Derdin village has been inhabited by the Abkhazians who have migrated from Guma Village in Abkhazia after the war between the Ottomans and the Russians. They also have named the newly inhabited village in Düzce, Guma after the place they left in Abkhazia. The official name of the village was renamed to Derdin Dolay after establishment of Turkish Republic. Nevertheless, the locals and the Abkhazian population of Düzce still use the name Guma.

The migrations to Düzce begin after 1861 after Tsarist Russia's policies of expansion, which states that the Caucasians will move either to places the government sees fit or to Ottoman territories. As a result of this the Circassians and Abkhazians who lived in the North Circassia and the Georgians and Laz who

lived in South Circassia began to migrate to Anatolia (Yaşayanlar 2014). The first wave of migration took place between 1857-1862, the second in 1863-1876 and the third in 1877-1912 (Genç 2016).

In the year 1877, over forty thousand people from Bzıp and Guma in Abkhazia who were thought to have supported the Ottomans were forced to migrate. Düzce Providence was under the jurisdiction of Kastamonu city when the immigrants were housed. In the 1896 records of Kastamonu presence of 56 villages by Circassians and 16 Abkhazian villages in Düzce Providence are acknowledged (Özsoy 2016).

One of these villages is the Derdin village which is the field of study of this research. The demographic structure that has been shaped through ethnical routes and the sense of togetherness during the migration process has brought along acculturation as well. The village enriched its culture and increased its population after the migrations from middle and east Black Sea took place in the 1920s.

The main business activities of the area are agriculture, farming and forestry. In 1960s Village Development Cooperative has been established and with the efforts of this organization a sawmill factory was opened. The logging business of the Department of Forestry has been the main means of support for the villagers, but as of today has terminated their activities. Although the Cooperative is not currently active many people still do logging and forestry for their/ income.

## **Methods**

In this study the traditional usages of some of the woody plants in Derdin Village of Düzce Providence have been researched. In between the years 2019-2020 visits to the field have been made in different vegetation seasons and information from the locals has been gathered from one on one interviews. These findings from these interviews have been recorded. The specimens of the plants have been picked with the help of the locals. The collected plant specimens were kept in DUOF (The Herbarium of the Düzce University, Faculty of Forestry). These specimens were basically identified with the Flora of Turkey (Davis 1965–1985, Davis et al. 1988, Güner et al. 2000). Information such as the tools made from woody plants, from which type of tree they have been made, their scientific and regional names, for what purpose they are used have been gathered and they are compared and contrasted in accordance with primary and secondary sources on the subject.

Since the field of study is mainly inhabited by Abkhaz immigrants, Abkhazian -their native tongue- is frequently used along with Turkish. For this reason, the regional names for the plants have been given in both languages. Many of the interviewees refer to the plants in their native tongue, Abkhazian.

## **Results**

This study has identified the woody plants from which the tools are made and these plants are given in (Table 1). The table is organized alphabetically in accordance with the family the plant belongs to. The scientific, Turkish names, local names, and English names of the plants, the part of the plants that are used, for what purpose they are used and the other usages of the plants in Turkey are written in Table 1. Information on this table is compared with other ethnobotanical studies in Turkey. (Akan et al. 2008, Akaydın et al. 2013, Altundağ and Öztürk 2011, Arı et al. 2015, Arituluk and Ezer 2012, Aslan et al. 2019, Bağcı 2000, Başer 1997, Baytop 1984, Cakilcioglu et al. 2011, Çakır 2017, Demirci and Özhatay 2012, Doğan et al. 2003, Doğan et al. 2004, Doğan et al. 2013, Doğan et al. 2015, Doğan and Tuzlacı 2015., Durmuşkahya and Öztürk 2013, Ertuğ 1999, Ertuğ 2000, Ertuğ 2002, Everest and Öztürk 2005, Ezer and Avcı 2004, Ezer and Arısan 2006, Genç and Özhatay 2006, Gürbüz et al. 2019, Gürdal and Kültür 2014, Gürhan and Ezer 2004, Güzel et al. 2015, Han and Bulut, 2015, Hayta et al. 2014, Irmak and Yılmaz 2008, Kahraman and Tatlı 2004, Kahveci et al. 2017, Kargıoğlu et al. 2008, Kaval et al. 2015, Kaya 2014, Kılıç and Bağcı 2013, Kızılarıslan and Özhatay 2012, Kızılarıslan and Sevgi 2013, Koca Doğru and Yıldırım 2010, Kocabaş et al. 2016, Koçak and Özhatay 2013, Kültür 2007, Kültür 2008, Mükemre et al. 2015, Özdemir and Alpınar 2015, Özgen et al. 2004, Özgökçe and Yılmaz 2003,

Özgökçe and Özçelik 2004, Özhatay et al. 2006, Özkan Gençler and Koyuncu 2005, Öztürk et al. 2013, Öztürk and Dinç 2005, Öztürk and Özçelik 1991, Polat et al. 2013, Polat et al. 2015, Sadıkoğlu and Alpınar 2000, Sargın et al. 2013, Sargın 2015, Sargın et al. 2015a, Sargın et al. 2015b, Sayar et al. 1995, Semiz et al. 2007, Sezik et al. 1993, Sezik et al. 1997, Şenkardeş and Tuzlacı 2014, Şimşek et al. 2002, Tabata et al. 2009, Tetik et al. 2013, Tuzlacı and Erol, 1999, Türkan et al. 2006, Uysal et al. 2010, Vural et al. 1997, Yasa Aktaş 2013, Yeşil and Akalın 2010-2011, Yeşilada et al. 1995).

Table 1. Identified woody species.

Species	Turkish Name/Local Name	English Name	Plant Part Used	Method of Using	Other uses in Turkey
<i>Carpinus betulus</i> L. (Betulaceae)	Karagürgen/Aheça	Black hornbeam	Wood	*Local tableware, construction materials, fuel, agricultural tool handle, knife handle.	C [32] FL [58] T [6, 34, 37, 42]
<i>Corylus avellana</i> L. (Betulaceae)	Fındık/Arasa	Hazelnut	Young branch	Fuel, basket, keg strip.	D [49] F [16, 35, 41] FL [41, 58] M [25, 51, 53] O [45] T [34, 37]
<i>Buxus sempervirens</i> L. (Buxaceae)	Şimşir/Aşidz	Boxwood	Wood, branch	Scoop, mixer, bowl, *instrument <i>Pkhoçiç</i> , agricultural tool handle.	M [26, 58] O [45] T [34, 37, 42, 75]
<i>Cornus sanguinea</i> L. (Cornaceae)	Kızılıcık/Abzıgra	Common Dogwood	Wood, young branch	Basket, yoke rods.	F [25] O [58] T [34, 37]
** <i>Cupressus sempervirens</i> L. (Cupressaceae)	Servi	Mediterranean Cypress	Wood	*Dowry chest, *supplies cabinet, *pier feet.	D [13] F [8] FL [58] M [5, 8, 21, 25, 26, 40, 62]
<i>Juniperus communis</i> L. (Cupressaceae)	Ardıç/ Ağ	Stinking juniper	Wood, branch	Garden fence, warehouse poles, lathe and carving, decoration.	C [8] M [4,5] O [8, 32, 59, 62, 63] T [34, 37, 74]
** <i>Robinia pseudoacacia</i> L. (Fabaceae)	Akasya/Akasi	Black locust	Wood, branch	Agricultural tool handle	M [5, 25] O [58] T [37]
<i>Quercus petraea</i> (Matt.) Liebl. (Fagaceae)	Meşe/Aj	Sessile oak	Wood, branch	Timber, fuel, agricultural tool handle, construction material, furniture, crop cart fingers, garden fence.	C [34] FL [37, 58] M [58] T [6, 34, 37, 42]
<i>Castanea sativa</i> Mill. (Fagaceae)	Kestane/Ağha	Chestnut	Wood, branch	As a construction material; *scaffolding, *pile, *column, *timber, furniture.	D [53] F [8, 73] FL [39, 58]

					M [53, 60] T [34, 73, 75]
<i>Fagus orientalis</i> Lipsky (Fagaceae)	Doğu Kayını/Aş	Oriental beech	Wood, branch	* Local kitchenware <i>amhabısta</i> , timber, cooking utensils, oven shovel, mixers, rolling pin, fuel, crop cart wheel holder, fuel.	C [41] FL [58] M [44, 51, 58] T [34, 37]
<i>Juglans regia</i> L. (Juglandaceae)	Ceviz/Akakan	Walnut	Wood, branch	Cooking utensils, chopping board and bread board, garlic paste, sieve, supplies cabinet, furniture.	C [37] D [4, 7, 8, 19, 25, 33, 45, 49, 54, 55, 58, 73, 74] F [7, 8, 15, 22, 25, 27, 36, 39, 43, 56, 73, 74, 76] M [3, 4, 5, 10, 18, 23-26, 28-31, 33, 35, 38, 39, 41, 44, 46, 47, 50, 53, 54, 57-63, 65, 66, 69-72] O [34] T [6, 34, 37, 42, 73]
<i>Laurus nobilis</i> L. (Lauraceae)	Defne/Adapa	Bay Laurel	Branch	*Fuel.	F [2, 8, 15, 27, 39, 45, 61, 63, 65] M [2, 5, 18, 21, 25, 26, 28, 29, 39, 59, 60, 61, 63, 65, 67, 71, 73]
<i>Tilia tomentosa</i> Moench. (Malvaceae)	Gümüşi İhlamur/Atakş	Silver Linden	Wood, branch	Picture frame, carved decorations	D [53] FL [53, 39] M [25, 51, 53, 60] O [39] T [37]
<i>Morus nigra</i> L. (Moraceae)	Dut	Black Mulberry	Wood, branch	Külek (Special container that helps to carry butter and milk).	F [3, 7, 15, 27, 39, 45, 54, 56, 64, 72] M [3, 4, 5, 7, 24-26, 53, 62, 63, 67, 68, 72] T [6, 34, 37, 42]
<i>Ficus carica</i> L. (Moraceae)	İncir/Alaha	Fig	Wood	*Instrument <i>Pkhoçıç</i> .	C [32] D [53] F [1, 8, 14, 15, 27, 39, 56, 64, 67, 72, 73]

					M [1-4, 21, 25, 26, 28, 33, 35, 53, 59, 61, 62, 72, 77]
<i>Fraxinus excelsior</i> L. (Oleaceae)	Dişbudak/Aja	Common ash	Wood, young branch	* Ladder frame, crop cart wheel center, digging handle, kitchenware, agricultural tool handle, meat chopping board.	M [26, 53] T [6, 37, 75]
** <i>Cedrus libani</i> A.Rich. (Pinaceae)	Sedir	Cedar	Wood, branch	Construction material, *chest, fuel.	C [4, 8, 67] FL [67] M [5, 8, 59, 61, 77]
<i>Abies nordmanniana</i> subsp. <i>equi-trojani</i> (Asch. & Sint. ex Boiss.) Coode & Cullen (Pinaceae)	Göknar/Amza	Trojan fir	Wood, branch	*Local kitchenware <i>Adugrişika</i> , ladder, instrument * <i>Apsa-Alaba</i> , *chest, churn, cage, shovel, sieve.	C [58] M [3, 26, 65] T [34]
** <i>Picea orientalis</i> (L.) Peterm. (Pinaceae)	Ladin	Oriental spruce	Wood, branch	*chest, *box, container, hoop.	T [37]
<i>Pinus nigra</i> J. F. Arnold subsp. <i>pallasiana</i> (Lamb.) Holmboe (Pinaceae)	Karaçam/Apsa	Black Pine	Wood, branch	Timber, warehouse, ladder step, threshing beater, churn, bread board, construction material, fuel, *instrument Apsa- Alaba	C [34] D [54] FL [35, 58] M [4, 5, 10, 24, 26, 28-30, 40, 54, 60, 68, 77] O [34] T [4, 6, 34, 35, 42, 58]
<i>Pinus sylvestris</i> L. (Pinaceae)	Sarıçam/Apsa	Scots pine	Wood, branch	Fuel, churn, dough tray, bread board, construction material, door, window, jambs.	C [34, 45, 55, 58] FL [58] M [3, 5, 26, 29, 40, 44, 52, 65, 70] O [32, 34] T [34]
<i>Platanus orientalis</i> L. (Platanaceae)	Çınar/Açamha	Plane	Wood, branch	Knob, supplies cabinet, sieve, saddle, cradle, bread board, rake handle.	D [73] M [5, 23, 25, 26, 28, 53, 59, 60, 63, 67, 71, 73] T [6, 37, 42, 75]
<i>Cydonia oblonga</i> Mill. (Rosaceae)	Ayva/Abiya	Quince	Wood, branch	*Fuel	D [39, 45, 49, 53] F [2, 16, 33, 39, 45]

					M [3, 5, 21, 23-26, 28, 30, 33, 41, 44, 53, 54, 57, 58-60, 65, 68, 69, 70, 72, 74]
<i>Malus sylvestris</i> (L.) Mill. (Rosaceae)	Elma/Aca	Apple	Wood, branch	*Fuel	D [19, 53, 37] F [4, 11, 15, 20, 35, 36, 37,67, 72] M [2, 3, 5, 26, 35, 36, 51, 53, 72, 74] T [37]
<i>Prunus avium</i> (L.) L. (Rosaceae)	Kiraz/Asaa	Cherry	Wood, branch	Carved container box, carved decoration	C [37] F [16] M [22, 26, 59, 61, 62, 65, 77] O [37] T [37]
<i>Prunus laurocerasus</i> L. (Rosaceae)	Karayemiş/Aşımha	Cherry laurel	Wood, branch, steam	*Fuel	M [26]
<i>Prunus divaricata</i> Ledeb. subsp. <i>divaricata</i> (Rosaceae)	Erik/Aphösa	Plum	Wood, branch	*Dolina Instrument hoop, mallet handle.	D [49, 53] F [2, 8, 15, 20, 35, 45] M [4, 5, 12, 30, 35, 44, 51, 53, 59, 61, 62] O [34] T [34]
<i>Pyrus elaeagnifolia</i> Pall. (Rosaceae)	Yabani Armut/Aha	Wild pear	Wood, branch	Lathe, furniture coating pipe and keg.	C [20] F [3, 17, 20, 35, 45, 61, 62, 68, 73,76] M [3, 4, 5, 28, 31, 35, 51, 73] T [45]
<i>Populus alba</i> L. (Salicaceae)	Ak Kavak/Ağhab	White poplar	Wood, branch	Vegetable container, timber, shovel handle, mousetrap, chest.	C [34] M [54, 63] T [6, 34, 42]
<i>Salix alba</i> L. (Salicaceae)	Ak Söğüt/Apslij	White willow	Wood, young branch	Pile, ladder frame, basket, sieve pulley	FL [48] M [3, 4, 23, 24, 28, 30, 36, 45, 47, 51, 63, 69, 71,77] O [45] T [6, 19, 34, 37, 42]

<i>Acer platanoides</i> L. (Sapindaceae)	Akçaağaç/Ağaza	European maple	Wood, branch	*Yoke, *tool handle.	-
<i>Taxus baccata</i> L. (Taxaceae)	Porsuk/Ağ	Yew	Wood, branch	Small crafts, small home furniture.	D [17, 53] FL [58] M [8, 53, 58] O [58]
<i>Ulmus minor</i> Mill. (Ulmaceae)	Karaağaç/Araş	Field elm	Wood, branch	Crop cart wheel, furniture, timber, pickaxe handle	C [20, 32, 45] M [3, 24, 25, 44, 51] O [32] T [6]

<sup>a</sup> Food: F – Medicinal: M – Fuel: FL – Dye: D – Ornamental: O – Construction Material: C – Tools: T.

<sup>b</sup> \* New uses in Turkey.

<sup>c</sup> \*\* Cultivated plants.

<sup>d</sup> (1) (Akan et al. 2008), (2) (Akaydın et al. 2013), (3) (Altundağ and Öztürk 2011), (4) (Arı et al. 2015), (5) (Arituluk and Ezer 2012), (6) (Aslan et al. 2019), (7) (Bağcı 2000), (8) (Başer 1997), (9) (Baytop 1984), (10) (Cakilcioglu et al. 2011), (11) (Çakır 2017), (12) (Demirci and Özhatay 2012), (13) (Doğan et al. 2003), (14) (Doğan et al. 2004), (15) (Doğan et al. 2013), (16) (Doğan et al. 2015), (17) (Doğan and Tuzlacı, 2015), (18) (Durmuşkahya and Öztürk 2013), (19) (Ertuğ 1999), (20) (Ertuğ 2000), (21) (Ertuğ 2002), (22) (Everest and Öztürk 2005), (23) (Ezer and Arisan 2006), (24) (Ezer and Avcı 2004), (25) (Genç and Özhatay 2006), (26) (Gürbüz et al. 2019), (27) (Gürdal and Kültür 2014), (28) (Gürhan and Ezer 2004), (29) (Güzel et al. 2015), (30) (Han and Bulut 2015), (31) (Hayta et al. 2014), (32) (Irmak and Yılmaz 2008), (33) (Kahraman and Tatlı 2004), (34) (Kahveci et al. 2017), (35) (Kargioğlu et al. 2008), (36) (Kaval et al. 2015), (37) (Kaya 2014), (38) (Kılıç and Bağcı 2013), (39) (Kızıllarslan and Özhatay 2012), (40) (Kızıllarslan and Sevgi 2013), (41) (Koca Doğru and Yıldırım 2010), (42) (Kocabaş et al. 2016), (43) (Koçak and Özhatay 2013), (44) (Kültür 2007), (45) (Kültür 2008), (46) (Mükemre et al. 2015), (47) (Özdemir and Alpınar 2015), (48) (Özgen et al. 2004), (49) (Özgökçe and Yılmaz 2003), (50) (Özgökçe and Özçelik 2004), (51) (Özhatay et al. 2006), (52) (Özkan Gençler and Koyuncu 2005), (53) (Öztürk et al. 2013), (54) (Öztürk and Dinç 2005), (55) (Öztürk and Özçelik 1991), (56) (Polat et al. 2013), (57) (Polat et al. 2015), (58) (Sadıkoğlu and Alpınar 2000), (59) (Sargın 2015), (60) (Sargın et al. 2013), (61) (Sargın et al. 2015a), (62) (Sargın et al. 2015b), (63) (Sayar et al. 1995), (64) (Semiz et al. 2007), (65) (Sezik et al. 1993), (66) (Sezik et al. 1997), (67) (Şenkardeş and Tuzlacı 2014), (68) (Şimşek et al. 2002), (69) (Tabata et al. 2009), (70) (Tetik et al. 2013), (71) (Tuzlacı and Erol 1999), (72) (Türkan et al. 2006), (73) (Uysal et al. 2010), (74) (Vural et al. 1997), (75) (Yasa Aktaş 2013), (76) (Yeşil and Akalın 2010-2011), (77) (Yeşilada et al. 1995)

### Woody plants that are used in architecture

Abkhazians who settled in the region with the exile, have undergone cultural changes over time. However, they have been trying to maintain many traditional cultural values. When they came to the region and start settling, they started to work in house construction by using their traditional knowledge in accordance with the conditions of the region. This workmanship is very similar to the traditional Black Sea construction technique that is used in the region. *Quercus petraea* (sessile oak) tree body which is water and moisture resistant, is used frequently as a beam and timber in residential construction. (Figure 2). Scaffolding parts of the stairs used to go upstairs inside the residences are made from *Salix alba* (willow) or *Fraxinus excelsior* (common ash) tree body. *Pinus sylvestris* (scots pine) body is preferred for the steps of the stairs. (Figure 3). *Castanea sativa* (chestnut) is often preferred for roof and columns of housing as it is hard and durable. In addition, they are used as building elements for outdoor living areas as piles and timber. (Figure 5).



Figure 1. Village house



Figure 2. Stairs

*Quercus petraea* (sessile oak), *Juniperus communis* (stinking juniper), and *Salix alba* (white willow) are used as garden fence which helps to establish borders of garden and fields. (Figure 5) The trees that will be used, should be cut and piled before the winter season. Otherwise, piles will rot and the garden fence will collapse during winter. When the garden fence is not built *Robinia pseudoacacia* (black locust) is planted in the field borders to act as a natural fence for the fields. The end point and borders of the fields are described by black locust that are planted side by side. Young body and branches of *Abies nordmanniana* (trojan fir), which are easy to shape, are often preferred for outdoor stair construction. (Figure 6).



Figure 4. Bench



Figure 3. Garden Fence



Figure 4. Stair

The sheltered buildings, which are called “Serender” or corn badges, in which the firewood are stored and have warehouses are built near houses and called “asa” by Abkhazians. The columns that support this structure are made from *Juniperus communis* (stinking juniper) body, beams are made from *Quercus petraea* (sessile oak) body, and timbers are made from *Fagus orientalis* (oriental beech) (Figure 7). In the past roofs of this structure was covered by `bedevre` (locally called *Ahovir*), which is a wooden layer that covers the roof, and made from *Abies nordmanniana* (trojan fir). However today roof tiles are used.



Figure 5. Serender



Figure 6. Warehouse

Warehouses that are stored in *Asa*, are made from *Pinus sylvestris* (scots pine) timber and used for storing winter crops such as wheat, corn, barley, and oats (Figure 8). It is among the most used tree species due to its wide spread area in the region. It is frequently used as a building material as its body is hard, durable and resinous. Also, it is used as fuel, timber, door, window frame, and doorjamb (Figure 9).



Figure 7. Door, niche



Figure 8. Wood of fuel

The pruned branches and all residues of the woody plants are evaluated fuel (Figure 10). *Fagus orientalis* (oriental beech), *Laurus nobilis* (bay), *Carpinus betulus* (black hornbeam), *Quercus petraea* (sessile oak), *Cydonia oblonga* (quince), *Malus sylvestris* (apple), *Prunus laurocerasus* (cherry laurel), *Acer platanoides* (european maple) are often preferred as fuel.

#### Woody plants used in agricultural tools

Although it is not used today, in the past time's construction, robustness and reliability of crop carts were really important. In the making of the crop cart, the yoke attached to the neck of the oxen made

from *Acer platanoides* (european maple) body and branch, handles at the bottom of the yoke are made from young branches of *Fagus orientalis* (oriental beech), and the rods are made from young branches of *Cornus sanguinea* (common dogwood) (Figure 11). The construction of the wheel of the crop cart is done by using different types of trees together. The center of the wheel is made from *Ulmus minor* (field elm)'s body, the arms of the wheel are made from *Quercus petraea* (sessile oak) branches, outside of the wheel is made from *Fraxinus excelsior* (common ash) branches (Figure 12).



Figure 9. Yoke



Figure 10. Wheel



Figure 11. Tray

The handles of tools that are used in agriculture are mainly made from woody plants. The body parts and the branches of *Fraxinus excelsior* (common ash) and *Robinia pseudoacacia* (black locust) which are hard and dense trees are often preferred for the handles of tools such as pickaxes, hoes and shovels.

*Pinus taxa* are preferred for making threshing tools due to their resinous and durable structure. They are preferred because the flintstones at the bottom are more firmly attached to the tree. The churner for making butter and the trays for making dough are also made from *Pinus nigra* (black pine) and *Pinus sylvestris* (scots pine) (Figure 11).

#### Woody plants used in making kitchen utensils

With migration, the culinary culture had to change along with the physical conditions in the settlements. At this point, immigrants are more closely tied to their customs and traditions in order to protect their identity from the identity of the dominant culture of where they have immigrated. Especially, they provided culinary cultures to be remembered by using traditional production techniques. Thus, they ensured the transition of culture between generations.

Abkhazians cook vegetables and herbs that are produced according to the season in their local dishes and use them in the dishes by mashing them. (Baj 1969). They perform this mashing process with a tool called *Akudırşıga* which can be considered as today's hand mixer. [Figure 14] When crushing food, *Akudırşıga* leaves it in a granular structure without removing its juice. Thus, the desired flavor in meals is provided. *Akudırşıga* is made from the branched and knotted upward-facing ends of *Abies nordmanniana* (trojan fir). It is preferred to have 5 or 6 pins. It is a traditional kitchen appliance still in use today.



Figure 12. Akudırşıga



Figure 13. Amhabista



Figure 14. Oven shovels

In the making of *mamursa*, the traditional food of Abkhazians, the purpose-built mixing device called *Amhabista* is used to mix this dish (Figure 15). The heat resistant *Fagus orientalis* (oriental beech) is preferred in the making of *Amhabista*. The bowl is wide and serves to stir the food upside down.

For the preparation of utensils used in the kitchen, rolling pins blenders and oven shovels are made from *Fagus orientalis* (oriental beech) branches, (Figure 176) cooking tools like scoops and mixers; bowls and spoons that are used for meals are made from *Buxus sempervirens* (boxwood) branches and are sometimes polished to ease up the dishwashing process. [Figure 147] Kitchen utensils such as bread boards, sieves and food cupboards are made from *Platanus orientalis* (plane tree) and *Juglans regia* (walnut) branches, which are harder trees.

The barrels used to store fermented foods and beverages are mostly made of *Quercus petraea* (sessile oak) (Figure 158). These kegs are made by stashing the curved pieces of wood coming from the body of *Quercus petraea* (sessile oak) around a circle. Churners generally used to make ayran or butter by churning milk or yogurt are usually made from *Abies nordmanniana* (trojan fir) (Figure 169). The body of *Abies nordmanniana* (trojan fir), cut into strips, are stacked next to each other and then they are attached to each other. To prevent it from it getting loose, it is surrounded by a sash made of *Corylus avellana* (hazelnut) branches. The wooden pots used to carry these products are made from the body and branches of *Morus nigra* (black mulberry) and *Salix alba* (white willow).



Figure 15. Cooking tools



Figure 16. Barrels



Figure 17. Churners

Abkhazian tables are called “ayfua”. These “ayfua” are about half a meter in diameter and a little more than half a meter in height. (Figure 18. Ayfua, Düzce Abkhazian Culture Association Archive). It is made as a single piece from the body of the *Carpinus betulus* (hornbeam) which is a hard species. They also have small stools made from the same type of tree. In Abkhazian culture, great importance is given to the guests and the table, it is a shame to put a blackened table in front of the guests, and in the same way, it is made sure that the table legs do not face the guests (Toygar Berkok and Toygar 1994).



Figure 18. Ayfua, Düzce Abkhazian Culture Association Archive



Figure 19. Ahuštaara, Düzce Abkhazian Culture Association Archive

*Quercus petraea* (sessile oak), used as fuel, is of particular importance for the Abkhazians. *Quercus petraea* (sessile oak) wood is often used to dry and process Abkhazian Cheese, which is a local cheese, and *Acer platanoides* (European maple) wood to dry and fumigate their meat. In order to smoke the cheese, *Quercus petraea* (sessile oak) wood is used in natural and self-burning fireplaces for 8-12 hours in order to have it dried. Previously, every house had a fireplace with hearth fitted inside called “Ahuštaara” (Figure 19. Ahuštaara, Düzce Abkhazian Culture Association Archive). Today, these fireplaces are taken outside of the house and the fuming process is carried out in the quarries located outside.

The consumption of fumed meat and cheese by Abkhazians who have migrated from the Caucasus is an adopted tradition during migration. In the past, the aim was to smoke food in the summer when the food was abundant to keep it from going rotten due to the reason that in the winter the food was scarce. The traditional use of the Caucasus appears in Derdin Village with migration.

Baskets are knitted from *Corylus avellana* (hazelnut), *Cornus sanguinea* (common dogwood), and *Salix alba* (white willow) branches, which are easy to shape. These baskets are mostly used to filter and store traditional Abkhazian cheese. After the raw cheese is produced, it is filtered by keeping it in the baskets for a few days in the cold and after the filtering process, the outer part of the cheese takes the form of the basket. For this reason, the size of the baskets knitted is set in accordance with the amount of cheese to be produced.

### Woody plants used in social life

Abkhazian people, who are intertwined with music and dance in their social lives, continued their traditional music and dances after the migration. They especially display their traditional instruments and dances at weddings. The major instruments used in such community rituals are made from woody plants in the region.

Rhythm is often used to ensure fluency in traditional Abkhazian music. Woody plant species used in the making of instruments in which rhythms are made are obtained from forest areas. Local musical instruments produced and used in the region are listed below.

**Pkhaçiq;** It is a 10 cm long instrument created by connecting wooden boards in the form of 6 wooden plates with the help of a string. It is especially used to provide fluency in dance music. It is usually made from *Buxus sempervirens* (boxwood) branches and *Ficus carica* (fig) branches (Figure 20).

**Apsa-Alaba;** Apsa and alaba are the most widely used rhythm instrument that is found in all of the traditional Abkhazian dances (Figure 21). A two-meter-long plank, which is usually made from *Abies nordmanniana* (trojan fir) body is placed on two piers. The music rhythm is kept by hitting this plank with sticks made of *Pinus nigra* (black pine) branches. The part of the plank is called “Apsa” and the stick part is called “Alaba”.

**Dolina;** It is a type of instrument that is made of *Prunus divaricata* (plum) body with stretched goat skin on the pulley. The diameter of this instrument is about 35 cm and it is called seat drum in Turkish (Figure 22). It is a frequently used instrument in dance styles with a fast rhythm.



Figure 20. Pkhaçiq



Figure 21. Apsa-Alaba



Figure 22. Dolina

Aesthetic concerns are always at the forefront of Abkhazians. Garden and home layouts have always been an important matter. This results in the production and use of decorative items used in social life are high. Although it is not as common these days, the dowry of young girls who have reached the age of marriage is stored in the chests. It is possible to encounter the chests that are made in the area which belong to elders of the villages. These chests are usually made from *Cedrus libani* (cedar) body, *Picea orientalis* (oriental spruce) body, *Cupressus sempervirens* (mediterranean cypress) body, and *Ulmus minor* (field elm) body. *Tilia tomentosa* (silver linden) body and branches, which are soft, light, and durable, *Prunus avium* (cherry) body or young branches, which can be easily carved, *Taxus baccata* (yew) body and branches, which are a durable but flexible species, are used in the production of carved decorative items.

Although it has been forgotten and not in use today, wool spinning carried out by woody instruments that were inherited from elders can still be seen in the research area (Figure 23). Wool comb, which is called “*Alasğug*” in Abkhazian used to separate wool (Figure 24). In order for the wool comb to function properly, it is preferred that the tip on the teeth is rusted. The branches of the *Pinus taxa*, which are common in the region, are used in the construction of the main body of the wool comb. After this process, spinning is done to turn the wool into rope. This tool is “*iğ*” and it is called “*Adıdğha*” in Abkhazian and it used for tying the wool via turning (Figure 25). A wooden piece named “*ağırşak*” and called “*Adırdı*” in Abkhazian is placed in the bottom of the “*iğ*” so that wool is kept in the place while turning to a rope. Both “*iğ*” and “*ağırşak*” is made from *Fagus orientalis* (oriental beech) which is again widely available in the region.



Figure 23. Separate wool



Figure 24. Alasğug



Figure 25. Adıdğha

As a result of the research, 33 woody plant taxa belonging to 18 families used in traditional tool making were determined in the village of Derdin in Düzce province. According to the data obtained, the usage intensity of the plants used according to the families is Rosaceae, Pinaceae and Fagaceae families, respectively. As a result of the evaluation, the vast majority of woody plants are used for more than one purpose.

When the usage density of woody plant taxa found in the study area is evaluated, it is seen that *Quercus petraea*, *Fagus orientalis*, *Pinus nigra*, *Buxus sempervirens* species are used respectively. According to the obtained data, uses of woody plants are selected by tree structure, ease of processing, durability, and usage area. When woody plants are used according to purposes that are determined and shown in the research, all the remaining residue is used as fuel.

## Discussion

Abkhazians, who came to the Anatolian lands, and showed a new place to settle, tried to carry their cultures and lifestyles. They tried to maintain their own culture in their lives, meals, dances (Korhan 2018). The people of Derdin Village, whose traditional life has not changed, have shaped their lives by using woody plants according to the financial possibilities, climate, and the needs of the period after they've left their homeland. Immigrants have rebuilt their lives by following the various social, political and economic values they brought from their geographies. Even if the values, habits, tastes, and crafts of the pre-immigration culture did not reflect exactly, they live in codes within the main culture (Genç et al. 2014).

The raw materials belonging to the stated species are obtained from the forest areas in the village. The abundance and availability of woody plant species increased usage in the region. It has been determined that the woody plant species used in the research area were made in their own workshops, in their own gardens. Apart from this, the people of the region, who trades in woodworking, made production and sales in the sawmill factory that was built by the locals.

When evaluated according to usage areas, woody plant types are frequently used in kitchen utensils. Woodworking which is common among the people is mainly used to produce kitchenware. Especially in the region, the ways of the ancestors in making these traditional tools are still in use in order to keep the culture alive. This situation makes the use of trees unique to the people of the region. People of the region, who trades in woodworking, mainly use their craftsmanship for supplying raw materials as timber for fuel.

Abkhazians, who strive to maintain their own culture in their lives, meals, dances, have benefited from the traces of their past as much as they can in the houses they built when they came to Anatolia.

Although the materials for housing construction differ according to the conditions of the region they live in, the Abkhazians generally benefited from the woodworking they mastered when building their houses here (Korhan 2018).

It is observed that wooden elements made of woody plant taxa are frequently used in the traditional residential architecture of the village. The high durability and hardness of the wood material make wood an extremely effective and valuable material, especially for use in the architectural field. There is a common and varying use of wood such as doors and windows, stairs, beams, frames, roof elements. Products used outdoors such as barn, warehouse and pile are produced from woody plant species obtained from the region. The technological changes and developments that have emerged over time brought with them different lifestyles and many residences have been built in the village with the understanding of modern architectural housing. Changing lifestyle has gradually reduced the use of wood in architecture. However, many building elements used especially in the exterior and interior designs of residences are still made of wood.

When compared to other ethnobotanical studies in Turkey, similar uses can also be seen in *Cornus sanguinea* (common dogwood) (Genç and Özhatay 2006, Kahveci et al. 2017, Kaya 2014, Sadıkoğlu and Alpınar 2000), *Juniperus communis* (stinking juniper) (Başer 1997, Irmak and Yılmaz 2008, Kahveci et al. 2017, Kaya, 2014, Sargın, 2015, Sargın et al. 2015, Sayar et al. 1995, Vural et al. 1997), *Corylus avellana* (hazelnut) (Kahveci et al. 2017, Kaya 2014, Koca Doğru and Yıldırım 2010, Kültür 2008, Sadıkoğlu and Alpınar 2000), *Robinia pseudoacacia* (black locust) (Kaya 2014, Sadıkoğlu and Alpınar 2000), *Quercus petraea* (sessile oak) (Aslan et al. 2019, Kahveci et al. 2017, Kaya 2014, Kocabaş et al. 2016, Sadıkoğlu and Alpınar 2000), *Juglans regia* (walnut) (Aslan et al. 2019, Kahveci et al. 2017, Kaya 2014, Kocabaş et al. 2016, Uysal et al. 2010), *Morus nigra* (black mulberry) (Aslan et al. 2019, Kahveci et al. 2017, Kaya, 2014, Kocabaş et al. 2016, Uysal et al. 2010), *Pinus sylvestris* (scots pine) (Kahveci et al. 2017, Kültür 2008, Öztürk and Özçelik 1991, Sadıkoğlu and Alpınar 2000), *Platanus orientalis* (plane) (Aslan et al. 2019, Kaya 2014, Kocabaş et al. 2016, Yasa Aktaş 2013), *Prunus avium* (cherry) (Kaya 2014), *Pyrus elaeagnifolia* (wild pear) (Ertuğ 2000, Kültür 2008), *Populus alba* (white poplar) (Aslan et al. 2019, Kahveci et al. 2017, Kocabaş et al. 2016), *Salix alba* (white willow) (Aslan et al. 2019) (Ertuğ, 1999, Kahveci et al. 2017, Kaya, 2014, Kocabaş et al. 2016, Kültür 2008), *Taxus baccata* (yew) (Sadıkoğlu and Alpınar 2000), *Tilia tomentosa* (silver linden) (Kaya 2014, Kızıllar and Özhatay 2012), and *Ulmus minor* (field elm) (Aslan et al. 2019, Ertuğ 2000, Irmak and Yılmaz 2008, Kültür 2008).

When compared to other ethnobotanical studies in Turkey, no similar uses were seen. These uses specified are recorded as new. *Cupressus sempervirens* (mediterranean cypress) species is used for decoration and construction material such as dowry chest, supplies cabinet, and pier feet. *Castanea sativa* (chestnut) species and *Fraxinus excelsior* (common ash) species are used for construction material. *Cedrus libani* (cedar) species, *Picea orientalis* (oriental spruce), and *Abies nordmanniana* (trojan fir) species are used for making decorations. *Carpinus betulus* (hornbeam) species is used for traditional tableware. *Fagus orientalis* (oriental beech) species and *Abies nordmanniana* (trojan fir) species are used for traditional kitchenware such as “Amhabista” and “Adugrişika”. *Ficus carica* (fig) species and *Buxus sempervirens* (boxwood) species, *Abies nordmanniana* (trojan fir) species, *Pinus nigra* (black Pine), and *Prunus divaricata* (plum) are used for making traditional musical instrument such as “Pkhochiç”, “Apsa-Alaba”, and “Dolina”. *Acer platanoides* (european maple) species is used for making tools such as yoke and tool handle. *Laurus nobilis* (bay laurel) species, *Cydonia oblonga* (quince) species, *Malus sylvestris* (apple) species, and *Prunus laurocerasus* (cherry laurel) species are used for fuel.

With this study, ethnobotanical characteristics of woody plant species that are locally used in Derdin village of Düzce province are evaluated. As a result of the study, 25 new uses have not been identified prior to this study. These species and uses in Turkey have been recorded for the first time with this study. It is hoped that this study will shed light on the more comprehensive ethnobotanical studies that will be carried out in Düzce region and its future.

## References

- Akan, H., Korkut, M. M. and Balos, M. M. (2008). Arat Dağı ve Çevresinde (Birecik, Şanlıurfa) Etnobotanik Bir Araştırma. *Fırat Üniversitesi Fen ve Mühendislik Bilimleri Dergisi*, 67-81.
- Akaydın, G., Şimşek, I., Arıtuluk, Z. C. and Yeşilada, E. (2013). An ethnobotanical survey in selected towns of the Mediterranean subregion (Turkey). *Turkish Journal of Biology* 37, 230-247.
- Aksoy, N. (2006). Elmacık Dağı (Düzce) Vejetasyonu. [Doktora Tezi] İstanbul Üniversitesi Fen Bilimleri Enstitüsü, İstanbul, Türkiye.
- Aksoy, N., Özkan, N. G., Aslan, S. and Koçer, N. (2014). Düzce İli Bitki Biyolojik Çeşitliliği, Endemik, Nadir Bitki Taksonları ve Koruma Statüleri. *Düzce'de Tarih ve Kültür*, 316-375.
- Aksoy, N., Özkan, N. G., Aslan, S. and Koçer, N. (2016). Düzce İli Botanik Tarihi Araştırmaları. *Düzce'de Tarih Kültür ve Sanat*, 409-421.
- Aksoy, N., Özkan, N. G., Aslan, S. and Koçer, N. (2017). Düzce İli Halk Kültüründe Tıbbi ve Yemeklik Olarak Kullanılan Bitkiler. *Düzce'de Tarih Kültür ve Sanat*, 206-221.
- Aksoy, N. (2018). Elmacık Dağı (Düzce) Florası. *Ot Sistematik Botanik Dergisi* 25(2), 105- 150.
- Altundağ, E. and Öztürk, M. (2011). Ethnomedicinal studies on the plant resources of east Anatolia, Turkey. *Procedia Social and Behavioral Sciences* 19, 756-777.
- Arı, S., Temel, M., Kargioğlu, M. and Konuk, M. (2015). Ethnobotanical survey of plants used in Afyonkarahisar-Turkey. *Journal of Ethnobiology and Ethnomedicine*, 1-15.
- Arıtuluk, Z. C. and Ezer, N. (2012). Halk Arasında Diyabete Karşı Kullanılan Bitkiler (Türkiye)-II. Hacettepe Üniversitesi Eczacılık Fakültesi Dergisi 32(2), 179-208.
- Aslan, M., Akan, H. and Balos, M. M. (2019). Şanlıurfa'da Bazı Odunsu Bitkilerin Etkinliği Üzerine Bir Araştırma. *Ot Sistematik Botanik Dergisi* 18(1), 117-137.
- Bağcı, Y. (2000). Aladağlar (Yahyalı, Kayseri) ve Çevresinin Etnobotanik Özellikleri. *Ot Sistematik Botanik Dergisi* 7(1), 89-94.
- Baj, J. (1969). Çerkesya'da Sosyal Yaşayış ve Adetler. *Kafkas Kültürel Dergi Yayınları*, Ankara.
- Başer, K. C. (1997). Current Knowledge On The Wild Food And Non-Food Plants of Turkey. *Cahiers Options Mediterraneennes*, 129-159.
- Baytop, T. (1984). Türkiye'de Bitkiler ile Tedavi Geçmişte ve Bugün. İstanbul Üniversitesi Yayınları, İstanbul.
- Cakilcioglu, U., Khatun, S., Turkoglu, I. and Hayta, S. (2011). Ethnopharmacological survey of medicinal plants in Maden (Elazig-Turkey). *Journal of Ethnopharmacology* 137, 469-486.
- Çakır, E. A. (2017). Traditional knowledge of wild edible plants of Iğdır Province (East Anatolia, Turkey). *Acta Societatis Botanicorum Poloniae* 86, 1-20.

- Davis, P. H. (1965–1985). *Flora of Turkey and the East Aegean Islands* Vol. 1–9. Edinburgh University Press, Edinburgh.
- Davis, P., Mill, R. & Tan, K. (1988). *Flora of Turkey and the East Aegean Islands*. Vol. 10. (Supplement I). Edinburgh University Press, Edinburgh.
- Demirci, S. and Özhatay, N. (2012) . An Ethnobotanical Study in Kahramanmaraş (Turkey); Wild Plants Used For Medicinal Purpose in Andırın, Kahramanmaraş. *Turkish Journal of Pharmaceutical Sciences* 9, 75-92.
- Doğan, Y., Başlar, S., Mert, H. H. and Ay, G. (2003). Plants used as Natural Dye Sources in Turkey. *Economic Botany* 57(4), 442-453.
- Doğan, Y., Başlar, S., Ay, G. and Mert, H. H. (2004). The Use Of Wild Edible Plants In Western And Central Anatolia (Turkey). *Economic Botany* 58(4), 684–690.
- Doğan, Y., Uğulu, İ. and Durkan, N. (2013). Wild Edible Plants Sold in The Local Markets Of Izmir, Turkey. *Pak. J. Bot.*, 45(S1), 177-184.
- Doğan, Y., Nedelcheva, A., Łukasz, L., Drăgulescu, C., Stefkov, G., Maglajlić, A., Ferrie J., Papp, N., Hajdari, A., Mustafa, B., Dajić-Stevanović, Z., Pieroni, A. (2015). Of the importance of a leaf: the ethnobotany of sarma in Turkey and the Balkans. *Journal of Ethnobiology and Ethnomedicine* 11(26), 1-15.
- Doğan, A. and Tuzlacı, E. (2015). Wild Edible Plants of Pertek (Tunceli-Turkey). *Marmara Pharmaceutical Journal* 19, 126-135.
- Durmuşkahya, C. and Öztürk, M.(2013). Ethnobotanical Survey of Medicinal Plants Used for the Treatment of Diabetes in Manisa, Turkey. *Sains Malaysiana* 42(10), 1431–1438.
- Ertuğ, F. (1999). Plants used in domestic handicrafts in Central Turkey. *Ot Sistematik Botanik Dergisi* 6(2), 57-68.
- Ertuğ, F. (2000). An ethnobotanical study in Central Anatolia (Turkey). *Economic Botany* 54(2), 155–182.
- Ertuğ, F. (2002). Bodrum Yöresinde Halk Tıbbında Yararlanılan Bitkiler. 14. Bitkisel İlaç Hammaddeleri Toplantısı Bildirileri. Eskişehir, 76-93.
- Everest, A. and Öztürk, E. (2005). Focusing on the ethnobotanical uses of plants in Mersin and Adana provinces (Turkey). *Journal of Ethnobiology and Ethnomedicine*, 1-6.
- Ezer, N. and Avcı, K. (2004). Çerkeş (Çankırı) Yöresinde Kullanılan Halk İlaçları. *Hacettepe Üniversitesi Eczacılık Fakültesi Dergisi* 24(2), 67-80.
- Ezer, N. and Arısan, Ö. M. (2006). Folk Medicines in Merzifon (Amasya, Turkey). *Turkish Journal of Botany* 30, 223-230.
- Genç, G. E. and Özhatay, N. (2006). An Ethnobotanical Study From European Part Of Istanbul (Çatalca) In Turkey. *Turkish Journal of Pharmaceutical Sciences* 3(2), 73-89.
- Genç, İ., Sütçü, Ç. and Zengin, H. (2014). Göçlere Yurt Olan Şehir: Düzce. *Düzce’de Tarih ve Kültür*, 83-95.
- Genç, İ. (2016). Düzce’ye Göçlerde Yaşanan Problemler ve Bazı Tespitler. *Düzce’de Tarih, Kültür ve Sanat*, 75-80.
- Güner, A., Özhatay, N., Ekim, T. & Başer, K. (2000). *Flora of Turkey and the East Aegean Islands* Vol.11. (Supplement II). Edinburgh University Press, Edinburgh.

- Gürbüz, İ., Gençler Özkan, A.M., Akaydın, G., Salihoğlu, E., Günbatan T., Demirci, F., Yeşilada E. (2019). Folk medicine in Düzce Province (Turkey). *Turkish Journal of Botany* 43(6), 769-784.
- Gürdal, B. and Kültür, Ş. (2014). The edible and miscellaneous useful plants in Marmaris (Southwest Turkey). *İstanbul Eczacılık Fakültesi Dergisi* 44, 69-78.
- Gürhan, G. and Ezer, N. (2004). Halk Arasında Hemoroit Tedavisinde Kullanılan Bitkiler-I. Hacettepe Üniversitesi Eczacılık Fakültesi Dergisi 24, 37-55.
- Güzel, Y., Güzelşemme, M. and Miski, M. (2015). Ethnobotany of medicinal plants used in Antakya: A multicultural district in Hatay Province of Turkey. *Journal of Ethnopharmacology* 174, 118-152.
- Han, M. İ. and Bulut, G. (2015). The folk-medicinal plants of Kadişehri (Yozgat – Turkey). *Acta Societatis Botanicorum Poloniae* 84, 237–248.
- Hayta, Ş., Polat, R. and Selvi, S. (2014). Traditional uses of medicinal plants in Elazığ (Turkey). *Journal of Ethnopharmacology* 154(3), 613-623.
- Irmak, M. A. and Yılmaz, H. (2008). Determination of the usability of woody plant species in Tortum - Creek Watershed for functional and aesthetical uses in the respect of landscape architecture. *Biological Diversity and Conservation* 1(1), 1-12.
- Kahraman, A. and Tatlı, A. (2004). Umurbaba Dağı (Eşme-Uşak) ve Çevresindeki Bazı Bitkilerin Mahalli Adları ve Etnobotanik Özellikleri. *Ot Sistematik Botanik Dergisi* 11(2), 147-154.
- Kahveci, E., Malkoçoğlu, S., Yeşilkaya, M. and Kahveci, (2017). Tokat İl Merkezi ve İlçelerinde Yetişen Bazı Odunsu Bitkilerin Etnobotanik Özellikleri. *Gaziosmanpaşa Bilimsel Araştırma Dergisi* 6(2), 62-75.
- Kargioğlu, M. Cenkci, S., Serteser, A., Evliyaoğlu, N., Konuk, M., Kök, M. Ş., Bağcı, Y. (2008). An Ethnobotanical Survey of Inner-West Anatolia, Turkey. *Human Ecology* 36(5), 763–777.
- Kaval, İ., Behçet, L. and Çakılcıoğlu, U. (2015). Survey of wild food plants for human consumption in Geçitli (Hakkari, Turkey). *Indian journal of traditional knowledge* 14, 183-190.
- Kaya, S. (2014). Düzce İli Kaynaşlı İlçesi Ahşap El Sanatları. [Yüksek Lisans Tezi] Süleyman Demirel Üniversitesi Güzel Sanatlar Enstitüsü, Isparta, Türkiye.
- Kılıç, Ö. and Bağcı, E. (2013). An ethnobotanical survey of some medicinal plants in Keban (Elazığ-Turkey). *Journal of Medicinal Plants Research* 7(23), 1675-1684.
- Kızıllarslan, Ç. and Özhatay, N. (2012). An ethnobotanical study of the useful and edible plants of İzmit. *Marmara Pharmaceutical Journal* 3(16), 194-200.
- Kızıllarslan, Ç. and Sevgi, E. (2013). Ethnobotanical uses of genus *Pinus* L. (Pinaceae) in Turkey. *Indian Journal Of Traditional Knowledge* 12(2), 209-220.
- Koca Doğru, A. and Yıldırım, Ş. (2010). Ethnobotanical Properties of Akçakoca District in Düzce (Turkey). *Hacettepe Journal Biology and Chemistry* 38(1), 63-69.
- Kocabaş, Y. Z., Çömlekçioğlu, N. and İlçim, A. (2016). Bazı Odunsu Bitki Türlerinin Kahramanmaraş İl Merkezi Ölçeğinde Etnobotanik Yönleri. *Gaziosmanpaşa Bilimsel Araştırma Dergisi* 12, 60-69.
- Koçak, S. and Özhatay, N. (2013). Wild Edible Plants In Karaman (Southern Turkey). *İstanbul Eczacılık Fakültesi Dergisi* 43, 21-32.
- Koçer, N., (2012). Samandere Vadisi ve Uğur Köyü Şimşirlik Mevkii (Düzce) Florası. [Yüksek Lisans Tezi] Düzce Üniversitesi Fen Bilimleri Enstitüsü, Düzce, Türkiye.

- Koçer, N. and Aksoy, N. (2013a). Uğursuyu ve Samandere Vadisi (Düzce)'nin Riparian Zon ve Dere Vejetasyonunun Florası. In: Biyolojik Çeşitlilik Sempozyumu, Marmaris, Muğla, 209-216.
- Koçer, N. and Aksoy, N. (2013b). Samandere Vadisi Ve Uğur Köyü – Şimşirlik (Düzce) Mevkisi'nin Bitki Çeşitliliği. In: Ekoloji 2013 Sempozyumu, Namık Kemal Üniversitesi Ziraat Fakültesi, Tekirdağ.
- Koçer, N. and Aksoy, N. (2015). Samandere Vadisi ve Uğur Köyü Şimşirlik (Düzce) Mevkisi'nin Ballı Bitkileri. In: 1. Ulusal Bitki Biyolojisi Kongresi, Abant İzzet Baysal Üniversitesi Basımevi, Bolu, 126.
- Koçer, N. and Aksoy, N. (2016). Samandere Vadisi ve Uğur Köyü Şimşirlik Mevkii (Düzce) Florası. Ormancılık Dergisi 12(2), 178-214
- Koçkar, M. T. and Koçkar, A. A. (2016). Kuzey-Batı Kafkasya Halklarının Geleneksel Müzik ve Çalgılarına Genel Bir Bakış. I. Ulusal Müzik ve Sahne Sanatları Sempozyum Bildirileri. Hacettepe Üniversitesi, Ankara Devlet Konservatuvarı.
- Korhan, T. (2018). Kafkasya'dan Anadolu'ya Benzerlikleri ve Farklarıyla Bir Kültür Sembolü Olarak Çerkes Evleri. Uluslararası Sosyal Bilimler Dergisi 2(12), 28-39.
- Kültür, Ş. (2007). Medicinal Plants Used in Kırklareli Province (Turkey). Journal of Ethnopharmacology 111, 341-364.
- Kültür, Ş., (2008). An ethnobotanical study of Kırklareli (Turkey). Phytologia Balcanica 14(2), 279 –289.
- Mükemre, M., Behçet, L. and Çakılcıoğlu, U. (2015). Ethnobotanical study on medicinal plants in villages of Çatak (Van-Turkey). Journal of Ethnopharmacology 166, 361-374.
- Özdemir, E. and Alpınar, K. (2015). An ethnobotanical survey of medicinal plants in western part of central Taurus Mountains: Aladaglar (Nigde – Turkey). Journal of Ethnopharmacology 166, 53-65.
- Özgen, U., Kaya, Y. and Coşkun, M. (2004). Ethnobotanical Studies in the Villages of the District of Ilica (Province Erzurum). Economic Botany 58(4), 691–696.
- Özgökçe, F. and Yılmaz, İ. (2003). Dye Plants Of East Anatolia Region (Turkey). Economic Botany 57(4), 454–460.
- Özgökçe, F. and Özçelik, H. (2004). Ethnobotanical Aspects Of Some Taxa In East Anatolia, Turkey. Economic Botany 58(4), 697–704.
- Özhatay, N., Akalın, E., Ecevit Genç, G. and Kültür, Ş. (2006). Medicinal uses of the wild vascular plants from European Turkey (Turkish Thrace). Scientific Area F-Ethnobotany and phytochemistry, 613-623.
- Özkan Gençler, A. M. and Koyuncu, M., (2005). Traditional Medicinal Plants Used in Pınarbaşı Area (Kayseri-Turkey). Turkish Journal of Pharmaceutical Sciences 2(2), 63-82.
- Özkan, N. G. and Aksoy, N. (2011). Hasanlar Baraj Gölü (Düzce ve Çevresinin Florası). Düzce Üniversitesi Ormancılık Dergisi 7(2), 39-72.
- Özsoy, N. (2016). Çerkes ve Abazaların Düzce'de İskanı ve Kurulan Yeni Yerleşimler. Düzce'de Tarih, Kültür ve Sanat, 372-389.
- Öztürk, M. Uysal, I., Gücel, S., Altundag, E., Dogan. Y., Baslar. S. (2013). Medicinal Uses of Natural Dye-Yielding Plants in Turkey. Research Journal of Textile and Apparel 17(2), 69-80.
- Öztürk, M. and Özçelik, H. (1991). Doğu Anadolu'nun Faydalı Bitkileri, Siskav Yayınevi, Ankara.

- Öztürk, M. and Dinç, M. (2005). Nizip (Aksaray) Bölgesinin Etnobotanik Özellikleri. *Ot Sistematik Botanik Dergisi* 12(1), 93-102.
- Polat, R., Çakılcıoğlu, U. and Satıl, F. (2013). Traditional uses of medicinal plants in Solhan (Bingöl—Turkey). *Journal of Ethnopharmacology* 148(3), 951-963.
- Polat, R., Cakilcioglu, U., Uluşan, M. D. and Paksoy, M. Y. (2015). Survey of wild food plants for human consumption in Elazığ (Turkey). *Indian Journal of Traditional Knowledge* 1(1), 69-75.
- Sadıkoglu, N. and Alpınar, K. (2000). Etnobotanik Açından Bartın. İstanbul, XIII. Bitkisel İlaç Hammaddeleri Toplantısı Bildirileri. Marmara Üniversitesi Eczacılık Fakültesi, İstanbul, 87-100
- Sargın, S. A., Akçicek, E. and Selvi, S. (2013). An ethnobotanical study of medicinal plants used by the local people of Alaşehir (Manisa) in Turkey. *Journal of Ethnopharmacology* 150(3), 860-874.
- Sargın, S. A. (2015). Ethnobotanical survey of medicinal plants in Bozyazı district of Mersin, Turkey. *Journal of Ethnopharmacology* 173, 105–126.
- Sargın, S. A., Selvi, S. and Büyükcengiz, M. (2015a). Ethnomedicinal Plants of Aydıncık District of Mersin, Turkey. *Journal of Ethnopharmacology* 174, 200-216.
- Sargın, S. A., Selvi, S. and López, V. (2015b). Ethnomedicinal plants of Sarıgöl district (Manisa), Turkey. *Journal of Ethnopharmacology* 171, 64–84.
- Sayar, A., Güvensen, A., Özdemir, F. and Öztürk, M. (1995). Muğla (Türkiye) İlindeki Bazı Türlerin Etnobotanik Özellikleri. *Ot Sistematik Botanik Dergisi* 2(1), 151-159.
- Semiz, G., Işık, K. and Unal, O. (2007). Enek Pekmez Production from Juniper "Fruits" by Native People on the Taurus Mountains in Southern Turkey. *Economic Botany* 61(3), 299-301.
- Sezik, E., Yeşilada, E., Honda, G., Tabata, M., Goto, K., Ikeshiro, Y. (1993). Traditional medicine in Turkey IV. Folk medicine in the Mediterranean subdivision. *Journal of Ethnopharmacology* 39(1), 31-38.
- Sezik, E., Yeşilada, E., Tabata, M. and Honda, G. (1997). Traditional medicine in Turkey VIII. Folk medicine in East Anatolia; Erzurum, Erzincan, Ağrı, Kars, Iğdır provinces. *Economic Botany* 51(3), 195-211.
- Şenkardeş, İ. and Tuzlacı, E. (2014). Some Ethnobotanical Notes from Gündoğmuş District (Antalya/Turkey). *Marmara Üniversitesi Sağlık Bilimleri Enstitüsü Dergisi* 4(2), 63-75.
- Şimşek, I., Aytekin, F., Yeşilada, E. and Yıldırım, Ş. (2002). Anadolu'da Halk Arasında Bitkilerin Kullanılmış Amaçları Üzerine Etnobotanik Bir Çalışma. *Bitkisel İlaç Hammaddeleri Toplantısı Bildirileri*. Eskişehir, 29-31.
- Tabata, M., Sezik, E., Honda, G., Yeşilada, E., Fukui, H., Goto, K., Ikeshiro, Y. (2009). Traditional Medicine in Turkey III. Folk Medicine in East Anatolia, Van and Bitlis Provinces. *Pharmaceutical Biology* 32(1), 3-12.
- Tetik, F., Civelek, Ş. and Çakılcıoğlu, U. (2013). Traditional uses of some medicinal plants in Malatya (Turkey). *Journal of Ethnopharmacology* 146(1), 331-346.
- Toygır Berkok, N. and Toygır, K. (1994). Kuzey Kafkas Mutfak Kültürü ve Yemekleri, Takav Matbaacılık, Ankara.
- Tuzlacı, E. and Erol, M. K. (1999). Turkish folk medicinal plants Part II: Eğirdir (Isparta). *Fitoterapia* 70(6), 593-610.
- Türkan, Ş., Malyer, H., Öz Aydın, S. and Tümen, G. (2006). Ordu İli ve Çevresinde Yetişen Bazı Bitkilerin Etnobotanik Özellikleri. *Süleyman Demirel Üniversitesi Fen Bilimleri Enstitüsü Dergisi* 10(2), 162-166.

URL-1. Düzce Fotoğrafları (2013). <https://www.duzce.co/118/derdin-köyü-derdin-villages> (Visited on date: 04/05/2020).

Uysal, İ., Onar, S., Karabacak, E. and Çelik, S. (2010). Ethnobotanical aspects of Kapıdağ Peninsula (Turkey). *Biological Diversity and Conservation* 3(3), 15-22 .

Vural, M., Karavelioğulları, F. A. and Polat, H. (1997). Çiçekdağı (Kırşehir) ve Çevresinin Etnobotanik Özellikleri. *Ot Sistematik Botanik Dergisi* 4(1), 117-124.

Yasa Aktaş, A. (2013). Göynük'te Geleneksel Ahşap İşçiliği. Ankara, Göynük Belediyesi Yayını 2, 117-134.

Yaşayanlar, İ. (2014). Kafkas Göçmenlerinin Yolculuğu ve Düzce'de İskanı (1857-1914). *Düzce'de Tarih ve Kültür*, 102-121.

Yeşilada, E., Honda, G., Sezik, E., Tabata, M., Fujita, T., Tanaka, T., Takeda, Y., Takaishi, Y. (1995). Traditional medicine in Turkey. V. Folk medicine in the inner Taurus Mountains. *Journal of Ethnopharmacology* 46(3), 133-152.

Yeşil, Y. and Akalın, E. (2010-2011). The Use Of The Wild Edible Plants in Kürecik (Akçadağ/Malatya). *İstanbul Eczacılık Fakültesi Dergisi* 41, 90-103.

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