

Investigate of Landscape Design Use Possibilities of Some Native Ericaceae Family Plants in Turkey

Türkiye'deki Bazı Doğal Ericaceae Familyası Bitkilerinin Peyzaj Tasarımında Kullanım Olanaklarının Araştırılması

 Müberra PULATKAN¹,  Gülçay ERCAN OĞUZTÜRK²

Abstract

The family Ericaceae is a large family of Angiosperms spread throughout the temperate regions of the Northern and Southern Hemispheres. It includes plants, shrubs and trees that are often found in acidic and inefficient growing conditions. Many species of the Ericaceae family are naturally found in the mountainous and forested areas of Turkey, which is a very rich country in terms of plant species diversity with its geographical location and climate characteristics. Landscape designs created using natural vegetation offer ecologically based and sustainable alternatives. However, in urban areas, natural vegetation is not utilized sufficiently and efficiently. These plants, which create a visual impact with the beauty of their forms, leaves, flowers and fruits in the rural landscape of Turkey, have not found sufficient use in the urban landscape, despite the favorable conditions in terms of climate and growing environment. In this study, the morphological characteristics and landscape usage possibilities of some Ericaceae family plants that grow naturally in Turkey and can be used to create effective landscapes with their aesthetic properties were investigated. It is aimed to encourage the use of these natural species, which have high potential in terms of sustainable and economic applications, in open-green areas.

Keywords: Ericaceae family, Natural plants, Urban landscape, Planting design, Visual effect

Özet

Ericaceae ailesi, Kuzey ve Güney Yarımkürelerin ılıman bölgelerine yayılmış geniş bir Angiosperm ailesidir. Genellikle asidik ve verimsiz yetiştirme koşullarında bulunan bitkileri, çalıları ve ağaçları içerir. Coğrafi konumu ve iklim özellikleriyle bitki tür çeşitliliği açısından oldukça zengin bir ülke olan Türkiye'nin dağlık ve ormanlık alanlarında Ericaceae familyasına ait pek çok tür doğal olarak bulunmaktadır. Doğal bitki örtüsü kullanılarak oluşturulan peyzaj tasarımları ekolojik temelli ve sürdürülebilir alternatifler sunmaktadır. Ancak kentsel alanlarda doğal bitki örtüsünden yeterli ve verimli bir şekilde yararlanılamamaktadır. Türkiye kırsal peyzajında formlarının, yapraklarının, çiçeklerinin ve meyvelerinin güzelliği ile görsel etki yaratan bu bitkiler, iklim ve yetiştirme ortamı açısından uygun koşullara rağmen kentsel peyzajda yeterli kullanım alanı bulamamıştır. Bu çalışmada, Türkiye'de doğal olarak yetişen ve estetik özellikleriyle etkili peyzajlar oluşturmak için kullanılacak bazı Ericaceae familyası bitkilerinin morfolojik özellikleri ve peyzaj kullanım olanakları araştırılmıştır. Sürdürülebilir ve ekonomik uygulamalar açısından potansiyeli yüksek olan bu doğal türlerin açık-yeşil alanlarda kullanımının teşvik edilmesi amaçlanıyor.

Anahtar Kelimeler: Ericaceae familyası, Doğal bitki, Kent peyzajı, Bitkilendirme tasarımı, Görsel etki

1. Introduction

Turkey is of great importance with its natural beauties, vegetation, and flora richness due to its geographical location and climate diversity. It is divided into three phytogeographic regions due to the difference in climate characteristics and topographic structure: European-Siberian, Mediterranean, and Irano-Turanian flora regions. Thanks to its location at the intersection of these three regions, Turkey is the center of origin and change of many genera and sections (Davis, 1965; Güner et al., 2012). In addition, Turkey hosts one of the richest flora in the world, with approximately 11,707 Pteridophyta and Spermatophyta taxa and approximately 3,649 endemic plant taxa (endemism rate 31.82%) (Güner et al., 2012). However, many plants with aesthetic qualities found in natural landscapes are not well known and cannot be used in urban landscapes despite appropriate temperature, rainfall, and soil conditions. Success in planting practices can be achieved by using natural plants in natural plant compositions (Yıldırım et al., 2017).

In plant design, aesthetic, functional and ecologically sustainable landscapes can be created by using different types of plants such as trees, shrubs, and ground cover (Sarı and Karışah, 2018). Apart from aesthetic, functional and economic services, plants are also of great importance in landscape areas in terms of ecological urban health. With the increase in population and the decrease in the number of green areas in cities, people's desire for a healthy life also increases. Increasing the amount of these green areas is directly proportional to the increase in the quality of life and productivity of city users. This situation brings the planting requirements in urban areas to the agenda.

Urban green areas are the natural environment of the city, the immediate surroundings of the city, and its extension within the city. It contributes to the healthy development of the city, brings nature to the city/urbanites with its vegetation and other living species, and gives peace and vitality to people (Aydemir, 2004). Plant materials used in urban landscapes are complementary elements that support the provision and maintenance of comfort requirements for the city and its citizens. Plants found in the city provide many valuable ecosystem services such as improving air quality, absorbing, reflecting or filtering extreme heat, controlling wind, reducing noise pollution, carbon sequestration, energy saving and microclimate regulation and rainwater management (Walker, 1985; Austin, 2001; Trowbridge and Bassuk, 2004; Roy et al., 2012). In line with these contributions and the demands of users, environmental regulation awareness has been gained, and versatile use in the selection of plant materials to be used in these arrangements has become widespread. In

urban landscaping, it is important to choose natural plant species that are resistant to local climatic factors and environmental conditions. Due to the difficult urban conditions, care should be taken in the plant species to be selected.

Although there are many plant taxa with ornamental plant value in the natural flora, the use of exotic plants in landscape designs is common. This situation may cause economic and ecological losses such as adaptation problems to local conditions and maintenance costs (Sarı and Öztürk, 2023). These species must be able to adapt to their environments and provide the desired aesthetic and functional effect. At this point, natural species specific to the region gain importance. In addition, the use of natural species in plant designs, both ecologically and economically, is effective in reducing the budgets required for planting and post-facility maintenance work.

Ericaceae family, woody plants spread in the temperate regions of the northern and southern hemispheres and mostly found in acid and inefficient growing conditions, is a large family of angiosperm plants that includes shrubs and trees. It contains 124 genera and approximately 4250 species (Christenhusz and Byng, 2016). It is represented by 9 species and 19 taxa in Turkey (Davis, 1962; Kayacık, 1966; Yaltrık 1967; Yaltrık, 1971). In our country, they naturally create a visual impact in forest areas and rural landscapes with their beauty of form, leaves, flowers, and fruits.

Ericaceae family plants are generally evergreen or deciduous shrubs and trees. Leaf blades are wide or narrow like needle leaves, opposite each other on the shoot or arranged in 3 or 4 circles. Flowers are found on the shoots one by one or in numerous clusters. The fruits of the family plants are mostly grape-like (Sleumer, 1960; Yaltrık, 1971; Stevens et al., 2004). Fruits of the Ericaceae family are rich in oils and proteins. It is high quality and nutritious for birds and wildlife animal species. Its flowers are also a quality food source for bees (Luteyn, 1983).

It has been known that the chemical components of some species of the Ericaceae family have beneficial effects on health since ancient times. It has been proven that especially the phenolic compounds contained in its leaves and their antioxidant properties have protective activities against many diseases (Spencer et al., 2012; Shahidi and Ambigaipalan, 2015; Bravo, 1998; Zafra-stone et al., 2007; Ștefănescu et al., 2019).

Ericaceae family is a valuable family among other families with the beauty of the form, leaves, flowers and fruits of its plant's. Many of its plants also have healing properties. In addition, successful results can be achieved in aesthetic, functional and ecologically valuable

planting designs with different usage areas. Due to these features, in this study, some Ericaceae family plants that grow naturally in Turkey and can be used to create effective landscapes with their aesthetic properties were introduced with their morphological features and the possibilities of using these species in landscaping were investigated.

2. Materials and Methods

Within the scope of the study, some Ericaceae family plants naturally distributed in Turkey were selected as study materials. The visual effects and functional properties of these plants were investigated, and their usage possibilities in Landscape Architecture were determined.

Among the taxa of this family that grow naturally and are common in Turkey, some are presented below:

- *Arbutus* (*A. andrachne* L., *A. unedo* L.)
- *Calluna* (*C. vulgaris* (L.) Hull.)
- *Erica* (*E. arborea* L., *E. verticillata* Forsk.)
- *Rhododendron* (*R. ponticum* L., *R. luteum* Sweet., *R. caucasicum* Pall., *R. simirnowi* Trautv., *R. ungemii* Trautv.)
- *Vaccinium* (*V. arctostaphylos* L., *V. myrtillus* L.) (Yaltrık, 1971; TUBİVES, 2004).

Natural and less well-known taxa in Turkey are given below:

- *Epigaea* (*Epigaea gaulttherioides* (Boiss. & Balansa)
- *Bruckenthalia* (*B. spiculifolia* (Salisb.) Reichenb.)
- *Rhodothamnus* (*R. sessilifolius* Davis)
- *Pyrola* (*P. rotundifolia* L., *P. chlorantha* Sw., *P. minor* L., *P. media* Sw.)
- *Orthilia* (*O. secunda* L.)
- *Moneses* (*M. uniflora* L.)
- *Monotropa* (*M. hypopithys* L.)
- *Andromeda* (*A. polifolia* L.) (Yaltrık, 1971; TUBİVES, 2004).

Rhodothamnus sessilifolius and *Epigaea gaulttherioides*, which are little-known taxa in Turkey from the Ericaceae family, are endemic plants for our country that do not grow anywhere other than Turkey and have a very local distribution (Yaltrık, 1971). *Rhodothamnus sessilifolius* is considered critically endangered plants category according to IUCN red list criteria. It is known from only two places in Northeastern Anatolia, both of which are very close to each other (Ekim, et.al., 2014). *Epigaea gaulttherioides* (Boiss. &

Bal.) Takht. has a natural distribution in Turkey, the Caucasus and Georgia, between altitudes of 900-2300 meters. It is a relic and rare species and is the Euxine element (Yaltrık, 1971; Stevens, 1978; Eminağaoğlu, 2014).

The form, leaf and flower characteristics of some species of the Ericaceae family are explained using references Yaltrık (1971), Burnie et al. (2004) and Mamıkoğlu (2007).

Arbutus andrachne L.

Form: Mostly 3-5 m., sometimes 10-12 m. It is a small evergreen tree and shrub. Its body is shiny, as if it was polished in a reddish color. As the bark ages, it peels off like onion skin, like in plane trees.

Leaf: Leaves are egg-shaped, 5-10 cm. size and usually with full edges, rarely with an irregular bottom.

Flower: The flowers are whitish in color and bloom between March and May.

Fruit: Fruit is 1-1.5 cm. It is about the size of orange yellow and light red in color and is less sugary than the other type (Figure 1).



Figure 1. Leaves, flowers (Anonim 2023a) and fruits (Anonim, 2023b) of *Arbutus andrachne*.

Arbutus unedo L.

Form: It is generally 4-6 m. A tall shrub is sometimes 8-10 m. It is an evergreen plant in the form of a small tree.

Leaf: The leaves are long, elliptical in shape, with toothed edges, pointed tips, hard like leather, and hairless on both sides.

Flower: The flowers are off-white or cream, light pink in color and in compound cluster type, and bloom intensively from March to May, sometimes in autumn.

Fruit: Hazelnut-sized, very decorative fruits first turn yellow, orange, and red when ripe (Figure 2).



Figure 2. Leaves, flowers (Anonim, 2023c) and fruits (Anonim, 2023d) of *Arbutus unedo*.

***Calluna vulgaris* (L.) Hull**

Form: It is generally 30-50 cm. It is a dwarf evergreen shrub that can sometimes grow up to 1 m tall.

Leaf: 1-3 mm. long, stemless needle leaves are arranged in four rows opposite each other on the shoots.

Flower: Flowers in white, cream, rose, pink and light purple colors are collected in clusters on a long stem. They bloom between July and November (Figure 3).



Figure 3. Form, leaves and flowers (Anonim, 2023e) of *Calluna vulgaris*.

***Erica arborea* L.**

Form: It is mostly a few meters, sometimes 4-5 m.

Leaf: Needle leaves, in 3-7 cm long, are arranged in 3-4 circles on the shoots. It is hairless on the neck, blunt at the tip, and deeply striped on the underside.

Flower: Compound panicle type flowers bloom in March-April. Their color is white-off-white and slightly scented (Figure 4).



Figure 4. Form, leaves and flowers (Anonim, 2023f) of *Erica arborea*.

***Rhododendron ponticum* L.**

Form: It is an evergreen shrub or tree, 3-5 m tall, with a round and irregular form.

Leaf: It has leaves that are hard like leather, full-edged, 8-12cm long, 2.5-4cm wide, shiny dark green on the upper surface, hairless on the upper and lower surfaces.

Flower: Flower buds begin to burst in the second half of April and show flowering that lasts up to the 7th and sometimes the 8th month. The flowers, which appear in the form of compound clusters, have long stems, hairy tops, colors in purple and shades of purple, and are very decorative (Figure 5). The bees that make honey from these flowers contain Ericolin and Andromedotaxin glycosides in their honey.



Figure 5. Form, leaves and flowers of *Rhododendron ponticum*.

***Rhododendron luteum* Sweet**

Form: It is a shrub that sheds its leaves in winter, can grow up to 3-4m tall, and generally forms a broad form.

Leaf: The leaves are mostly broad, spear-like, with finely toothed edges and covered with fine hairs on both sides. Autumn coloration is very decorative. In autumn, leaf coloration is observed, which is yellow, orange and eventually red and sometimes burgundy.

Flower: It has bright yellow and pungently scented flowers, which usually start before the leaves and are very densely located on the plant (Figure 6). Its flowers are poisonous, and their scent is intoxicating. Bees get the famous mad honey from the Black Sea coast from their flowers.



Figure 6. Leaves, flowers and autumn foliage of *Rhododendron luteum*.

Vaccinium myrtillus L.

Form: It is a shrub, maximum 30-50cm tall, that sheds its leaves in winter.

Leaf: The leaves are oval-shaped, pointed, and have toothed edges. Red leaf coloration in autumn is quite aesthetic.

Flower: Its flowers, which bloom in May, are pale pink and bell-shaped.

Fruit: Edible fruits are small, dark blue, smoky, and sweet (Figure 7). It is valued for its taste and healing properties.



Figure 7. Fruits (Anonim, 2023g) and autumn foliage (Anonim, 2023h) of *Rhododendron luteum*.

Epigaea gaulttherioides (Boiss. & Balansa)

Form: It is an evergreen, creeping plant that grows up to 40 - 50 cm.

Leaf: The leaf is elliptical in shape, hard as leather, full-edged, and both sides are covered with sparse, coarse hairs.

Flower: The petals of the flowers, which bloom between May and July, are white and pink, 2-6 cm in diameter and funnel shaped (Figure 8).



Figure 8. Flowers of *Epigaea gaulttherioides* in nature habitat.

Bruckenthalia spiculifolia (Salisb.) Reichenb

Form: It is an evergreen, woody plant that can grow up to 25 cm.

Leaf: The leaves, which have become narrow leaves, are arranged in a circle of 4.

Flower: Many of the pink flowers that bloom between July and August form terminal, dense spike-type plants together (Figure 9).

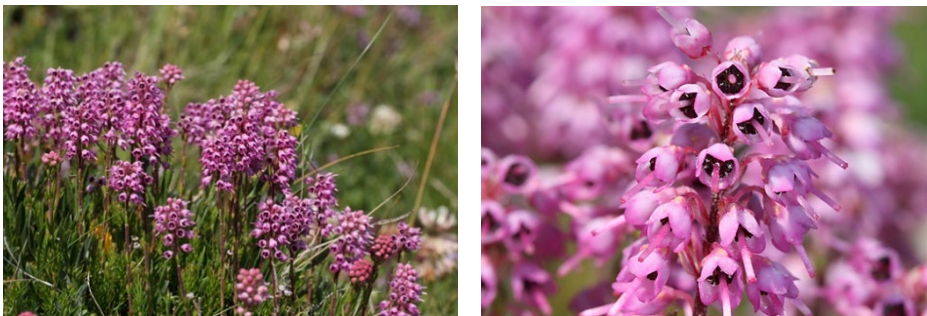


Figure 9. Form and flowers (Anonim, 2023i) of *Bruckenthalia spiculifolia*.

Rhodothamnus sessilifolius Davis

Form: 10 cm. It is a tall, evergreen, woody plant.

Leaf: The leaves are inverted egg-shaped, sessile, and full-edged (Figure 10).

Flower: The petals of the flowers, located one by one at the ends of the shoots, are pink - purple in color and bloom in June-July.



Figure 10. *Rhodothamnus sessilifolius* in nature habitat.

***Pyrola rotundifolia* L.**

Leaf: Leather-like leaves are 3-4 cm long and have a round shape.

Flower: The flowers, which bloom in June and July, are in the form of a cluster consisting of 3 to 10 hanging flowers on a long stem and are greenish white in color (Figure 11).























Figure 11. Form, leaves and flowers of *Pyrola rotundifolia* (Anonim, 2023j).

3. Results and Discussion




In the study, the forms, leaf, flower and fruit states, visual effects and areas of use in landscape architecture of the plants of the Ericaceae family, which are naturally spread and found locally in Turkey and have landscape value, are presented in Table 1. While creating the table, references in the literature and observations were used (Davis, 1962; Yaltrık, 1971; Davis, 1978; Stevens, 1978; Clarke, 1982; Burnie et al., 2004; Ansin and Ozkan, 2006; Eminağaoğlu, 2014).


Table 1. The forms, leaf, flower and fruit states, visual effects and areas of use in landscape architecture of the some Ericaceae family plants.

Scientific name	Habitat	Form	Foliation feature	Visual effect	Functional feature	Usage area in landscape
<i>Arbutus andrachne</i>	Maquis formation Arid lands and rocky areas		Evergreen		Sweet and medicinal fruit, Hedge plant Wind screen Shade tree	Urban green areas Areas under marine influence Areas affected by wind Children's playgrounds with the beauty of form, fruits and flowers
<i>Calluna vulgaris</i>	North facing slopes, arid and poor lands, Acidic volcanic rocks		Evergreen		Groundcover Hedge plant Resistance to saline soils and salt spray	Urban green areas with the beauty of form and flowers Beach regulations Salty soils Sunny areas
<i>Erica arborea</i>	Pseudomachia plant Mixed sparse forest undergrowth Acidic, arid, sandy, poor soils, gravelly environments and sunny regions		Evergreen		They have no ecological demands An ideal hedge, border embankment or barrier plant Soil stabilizer Making a broom from its branches and a pipe from its wood	Residential gardens and Rock gardens with the beauty of form and flowers Creating fences, borders, sets or barriers Highway slope stabilization Median plantings
<i>Rhododendron ponticum</i>	Leafy and needle Prefers damp places under leafy forests		Evergreen		Border element Background plant Resistance to air pollution Semi-Shade plant	Urban areas, parks with the beauty of form and flowers Highway slope stabilization Median plantings Border element, hedge-like and flowering hedge plant Back ground plant
<i>Rhododendron luteum</i>	Needle Beneath and bordering the leafy forests, In open areas, Loves moisture but can also		Deciduous		Border and fence element Groundcover Soil stabilizer The honey made from its	Urban areas, parks with the beauty of flowers and autumn foliage It is used in boundary element and fence construction, in

	tolerate dry conditions				flowers is medicinal	green areas in cities with air pollution It should not be used in children's playground due to its flowers. In median plantings In shade and semi-shade humid places
<i>Vaccinium myrtillus</i>	Kazdağ, Uludağ, Ugazdağ and the high altitudes of the Eastern Black Sea Region coniferous forests such as Karacam, Sarıcam and Goknar in the regions under In loose and acidic soils		Deciduous		Border and fence element Groundcover Soil stabilizer Its fruit, flowers, roots and leaves are medicinal. Fruit is healing	Residential gardens Rock gardens Children's playgrounds Urban areas parks and gardens with the beauty of form, flowers and autumn foliage
<i>Epigaea gaultherioides</i>	It spreads locally in Northeastern Anatolia, In <i>Picea - Abies</i> mixed forests with <i>Rhododendron ponticum</i> L. <i>Vaccinium arctostaphylos</i> L. and <i>Daphne ponticum</i> L. The dead crawls on the blanket and lies down		Evergreen		Groundcover Border element Soil stabilizer	Residential gardens Rock gardens Border plantings Urban areas Ground cover in parks and gardens
<i>Bruckenthalia spiculifolia</i>	In Southeastern Europe and Anatolia, alpine meadows, among dwarf <i>Juniper</i> and <i>Rhododendron</i> On steep slopes covered with bushes		Evergreen		Groundcover, Border element Soil stabilizer	Residential gardens, Rock gardens Border plantings Urban areas Ground cover in parks and gardens
<i>Rhodothamnus sessilifolius</i>	It is located on rock outcroppings in a small area at an altitude of 2000-2300m on Tiryal Mountain in Murgul district of Artvin province.		Evergreen		Ground cover Border element Soil stabilizer	Residential gardens Rock gardens Border plantings Urban areas Ground cover in parks and gardens Accent element
<i>Pyrola rotundifolia</i>	In Northern Anatolia, between 1350-2100 m,		Evergreen		Ground cover	Residential gardens Rock gardens

under fir forests and among <i>Rhododendron</i>		Border element Accent element	Border plantings Urban areas Ground cover in parks and gardens
---	---	--	---

 : Tree  : Shrub  : Groundcover

 : Leaf, flower and fruit effect

4. Results

Nature offers unique beauties with its existing plant compositions. Many plants with their aesthetic properties in the natural landscape are not used in the urban landscape despite the appropriate conditions in terms of temperature, precipitation, and soil. However, successful planting practices can be achieved with the use of natural plants found in plant compositions in nature.

One of the reasons why natural plant species are not used enough in herbal practices is that the plant material is not well known. Studies aimed at recognizing, describing, and promoting Turkey's natural vegetation are increasing day by day.

Ecological conditions are very important for the plant to provide the desired aesthetic and functional effect. The fact that the tree species planted are suitable for the climate and soil conditions of the region is effective in ensuring continuity.

Using natural species can minimize maintenance measures. The use of exotic species instead of natural species causes nature-rich vegetation to remain in rural areas. Natural woody species has aesthetic properties and a wide variety of functional uses such as the beauty of flowers and fruits, autumn colors, general forms, etc. It has aesthetic properties and a wide variety of functional uses. They create beautiful landscapes because of their ability to change throughout the four seasons. Due to these features, planting applications will be more successful and effective.

Ericaceae family plants, which are naturally found in our country, are among the plants that should be evaluated in urban planting designs with their functional features as well as the beauty of their leaves, flowers, and forms. They are generally more durable and provide a more natural appearance than exotic species frequently used in landscaping applications. With their advantages, they can be used in recreational landscaping applications.

It is thought that Ericaceae plants will increase the success of planting designs in rural and urban landscapes when evaluated from a functional perspective due to their ecological properties as well as their aesthetic properties. In addition, since they are natural species for

Turkey, they will minimize maintenance costs by ensuring the continuity of planting designs. For this reason, it is very important to cultivate natural plant species, investigate their adaptation abilities, and incorporate them into landscape applications.

References

- Anonim, (2023a). https://www.stervinou.fr/en/a1000_arbutus-andrachne.html. Erişim tarihi 27.10.2023.
- Anonim, (2023b). <https://mursidindemircan.com/2016/11/arbutus-cinsinden-bir-agac-sandal-agaci-gecmisten-gelecege>. Erişim tarihi 27.10.2023.
- Anonim, (2023c). <http://yabanicicekler.com/flower/arbutus-unedo-671> Erişim tarihi 27.10.2023.
- Anonim, (2023d). <https://tuncbotanik.com/urun/kocayemis-arbutus-unedo-fidani/2164> Erişim tarihi 27.10.2023.
- Anonim, (2023e). <https://plants.ces.ncsu.edu/plants/calluna-vulgaris> Erişim tarihi 28.10.2023.
- Anonim, (2023f). https://www.actaplantarum.org/flora/flora_info.php?id=503719 Erişim tarihi 28.10.2023.
- Anonim, (2023g). <https://thessfyta.gr/en/fruit-trees/39-blueberry-vaccinium-myrtillus.html> Erişim tarihi 28.10.2023.
- Anonim, (2023h). https://www.tripadvisor.com.tr/LocationPhotoDirectLink-g274958-d290980-i112779384-Tallinn_Botanic_Garden-Tallinn_Harju_County.html Erişim tarihi 28.10.2023.
- Anonim, (2023i). https://bgflora.net/families/ericaceae/bruckenthalia/bruckenthalia_spiculifolia/bruckenthalia_spiculifolia_en.html Erişim tarihi 28.10.2023.
- Anonim, (2023j). <https://www.first-nature.com/flowers/pyrola-rotundifolia.php> Erişim tarihi 28.10.2023.
- Ansin, R., & Ozkan, Z.C. (2006). *Seed Plants (SPERMATOPHYTHA) Woody Taxons*. KTU Publication Number: 167, Forestry Faculty Release Number: 19. KTU Printing Office, 512p. Trabzon, Turkey.
- Austin, R.L. (2001). *Elements of Planting Design*. John Wiley&Sons Inc., United State of America.
- Aydemir, S. (2004). *Kentsel Alanların Planlanması ve Tasarımı*. Akademi Kitabevi, Trabzon, Türkiye.

- Bravo, L. (1998). Polyphenols: Chemistry, Dietary Sources, Metabolism, and Nutritional Significance. *Nutrition reviews*, 56(11), 317-333.
- Burnie, G., Forrester, S., Greig, D., Guest, S., Harmony, M., Hobley, S., & Ryan, S. (2004). *Botanica*. Konemann: Tandem Verlag GmbH, 1020 p. Italy.
- Christenhusz, M. J., & Byng, J. W. (2016). The Number of Known Plants Species in The World and Its Annual Increase. *Phytotaxa*, 261(3), 201-217.
- Clarke, J.H. (1982). *Getting Started with Rhododendrons and Azaleas*. Timber Press, 268p. USA.
- Davis, P.H. (1965). *Flora of Turkey and The East Aegean Islands*. Edinburgh University Press, Vols. 1-9. Edinburgh:
- Davis, P. H. (1962). *Rhodothamnus sessilifolius* PH Davis. *Icones Plantarum*, 36, 3575.
- Davis, P.H. (1978). *Flora of Turkey*. Edinburgh University Press. 580p. Edinburgh.
- Ekim, T., Terzioğlu, S., Eminağaoğlu, Ö., & Coşkunçelebi, K., (2014). *Red List of The Endemic Plants Of The Caucasus: Turkey*. *Red List of the Endemic Plants of The Caucasus*. Missouri Botanical Garden Press, (Pp.209-242), Missouri, USA.
- Eminağaoğlu, Ö. (2014). *Rhodothamnus Reichb.* In Ü. Akkemik (Ed), *Türkiyenin Doğal-Egzotik Ağaç ve Çaluları 2, Angiospermler*. OGM Genel Müdürlüğü Yayınları. Ankara, Türkiye.
- Güner, A., Aslan, S., Ekim, T., Vural, M. & Babaç, M.T. (Ed.) (2012). *Türkiye Bitkileri Listesi Damarlı Bitkiler*, Nezahat Gökyiğit Botanik Bahçesi Botanik Bahçesi ve Flora Araştırmalı Derneği Yayını, Flora Dizisi 1, İstanbul, Türkiye.
- Kayacık, H. (1966). *Orman ve park ağaçlarının özel sistematigi*, III. Cilt, *Angiospermae (Kapalı Tohumlular)*. İstanbul Üniversitesi Orman Fakültesi Yayını, İstanbul, Türkiye.
- Luteyn, J. L. (1983). Ericaceae: Part I. Cavendishia. *Flora Neotropica*, 35, 1-289.
- Mamıkoğlu, N. G. (2007). *Türkiye'nin Ağaçları ve Çaluları*. Doğuş Grubu İletişim Yayıncılık ve Ticaret AŞ, İstanbul, Türkiye.
- Roy, S., Byrne, J. & Pickering, C. (2012). A Systematic Quantitative Review of Urban Tree Benefits, Costs, And Assessment Methods Across Cities İn Different Climatic Zones. *Urban Forestry & Urban Greening*, 11(4), 351-363.
- Sarı, D. & Karaşah, B. (2018). Bitkilendirme Tasarımı Öğeleri, İlkeleri ve Yaklaşımlarının Peyzaj Tasarımı Uygulamalarında Tercih Edilirliği Üzerine Bir Araştırma. *MEGARON*, 13(3), 470-479.

- Sarı, D. & Öztürk, Z. (2023). Etnobotanik Kullanımı Olan Bazı Doğal Bitkilerin Peyzaj Değerleri: Maçka (Trabzon) Örneği. *Turkish Journal of Forest Science*, 7(2), 189-209.
- Shahidi, F.; Ambigaipalan, P. (2015). Phenolics and Polyphenolics In Foods, Beverages and Spices: Antioxidant Activity and Health Effects—A Review. *Journal of functional foods*, 18, 820–897.
- Sleumer, H. (1960). Ericaceae. *Flora Malesiana-Series 1, Spermatophyta*, 6(1), 469-914.
- Spencer, J.P.E., Crozier, A., Rodriguez-Mateos, A., Del Rio, D., Tognolini, M., & Borges, G. (2012). Dietary (Poly) Phenolics in Human Health: Structures, Bioavailability, and Evidence of Protective Effects Against Chronic Diseases. *Antioxid. Redox Signal*, 18, 1818–1892.
- Ștefănescu, B. E., Szabo, K., Mocan, A., & Crișan, G. (2019). Phenolic Compounds From Five Ericaceae Species Leaves and Their Related Bioavailability and Health Benefits. *Molecules*, 24(11), 2046.
- Stevens, P. F., Luteyn, J., Oliver, E. G. H., Bell, T. L., Brown, E. A., Crowden, R. K., & Weiller, C. M. (2004). *Ericaceae*. In *Flowering Plants: Dicotyledons: Celastrales, Oxalidales, Rosales, Cornales, Ericales* (Pp. 145-194). Berlin.
- Trowbridge, J.P., & Bassuk, N.L. 2004. *Trees in The Urban Landscape*. John Wiley&Sons Inc., United State of America.
- TUBIVES. (2004). Turkish Plants Data Service.
- Walker, D.T. (1985). *Planting Design*. PDA Publishers Corporation. Arizona, USA.
- Yaltrık, F. (1967). Contribution to The Taxonomy of Woody Plants in Turkey. *Notes from the Royal Botanic Garden Edinburgh*, 28(1), 9-10.
- Yaltrık, F. (1971). Ericaceae Familyasının Memleketimizde Az Tanınan Taksonlarına Toplu Bakış. *Journal of The Faculty of Forestry Istanbul University*, 71-85.
- Yıldırım, N., Pulatkan, M., & Turna, İ. (2017). Effects of Different Medium on Seed Germination of *Spartium junceum* L. with Medicinal and Aromatic Importance. *International Journal of Secondary Metabolite*, 4(3, Special Issue 2), 376-383