

Flora of Dedegül Mountains and its effects to agricultural production of lakes region

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Abstract: It is known that the ancestors of agricultural plants and the agricultural plants grown in a geographical area are closely related to the wild flora. As a parallel to the Turkish Flora, the Lakes Region also has an important plant diversity. Although the flora of Antalya is not fully known, 2500 taxa; It is known that Isparta carries 2,300 (600 endemic) and Burdur carries 1600 (450 endemic) taxa. On the other hand, it is stated in the scientific sources that the mediterranean region is the center of the differentiation of some genera from the four important groups of medicinal and aromatic plants: Lamiaceae / Labiatae, Apiaceae / Umbelliferae, Rosaceae and Papaveraceae families. Production and diversity of coriander, cumin, fennel in Burdur; carrot in Isparta; Dill, radish, turnip; Poppy, apple, fat rose, strawberry, blackberry, quince, quince, deer apple, hawthorn in Lakes Region are very high. They also have a significant potential in wild plants that have been harvested. Sütçüler thyme, rose hip, sage are some of these. The secret of this success in the agricultural products of the Region is many ecological factors besides belonging to Dedegül Mountain and Bozburun Mountain which is the extension of this mountain; Beyşehir Lake National Park, Kızıldağ National Park, Köprülü Kanyon National Park; Kovada Lake National Park and Eğirdir Lake. The Lakes Region has an important gene center and microclimatic effects. The most effective factor in formation of these features is seen as the floristic richness and topographical structure of Dedegül mountain. This report emphasizes the relationship between the Dedegül Mountain and the agricultural production in the region.

1. Introduction

Dedegül Mountains are a mountain range 5-8 km wide between the Beyşehir and Eğirdir Lakes to the east of the Lakes Region, extending about 60 km in the north-south direction. Beyşehir is the eastern border of the area and it forms Büyükçay's arms, which are poured into this Lake. The west border is Davras Mountain, Aksu Creek and the basin. To the east, Beyşehir Lake, Kurucaova town, Dumanlı village and Yeşildağ city; to the north is Şarkikaraağaç, Sultan Mountains, Eğirdir Lake, Aksu in the west, Sarp Mountain; in the south it is surrounded by Köprüçay valley and Emerdin mountain, Sütçüler city, Kesme and Derebucak towns. Bird flight in north-south direction the field is generally mountainous and rugged. It is tectonic. The rocks are generally serpentine, volcanic and limestone. The area: 138568 ha, Coordinates: 31,25 'D, 37,74 ° K, altitude. It is 820-2992 m. It is mostly located in Isparta (Şarkikaraağaç, Gelendost, Eğirdir, Beyşehir, Yenişarbademli, Aksu, Sütçüler cities) and partially in the province of Konya (Beyşehir district); No protection status. May be harmed.

"Dedegül" is the name of a mountain range between Yenişarbademli, Aksu, Eğirdir, partly Sütçüler (Isparta) and Beyşehir (Konya) districts. Beyşehir Lake on one side and Kızıldağ National Park and Eğirdir Lake on the other. It is the highest mountain in the world. Dedegül Tepe is at the height of 2992 m altitude. Other peaks; Kartal peak is 2983 m, Karçukuru peak is 2932 m high (Güner, 2005; Eken et al., 2006).

Zindan Cave (in Aksu city), Pinargözü Cave (in Yenisarbademli, 16 km in length) are the most attractive caves of Türkiye. Rock type and karstic structure have been very influential in the formation of caves and boulders. It is the richest area of the Lake District in terms of vegetation and animal diversity. The mountain was selected as one of Türkiye's 122 Important Plant Areas (Özhatay, 2006). At the same time, it is the Important Nature Areas of Türkiye (Eken, 2006). These names are international project and book names. The important fresh water resources of the region are the effects of this mountain or mountain. Especially Karagöl (2350 m) is an interesting karst formation. This lake, which is fed with snow water, has its base paved and its edges are clay. The waters leaking from the bottom of this lake are transformed into important rivers on the side of Antalya and these waters are mainly used for agricultural production.

Dedegül peak is integrated with the Anamas mountains. Cedar and larch forests dominate up to 2000 m. It is one of the areas where the nomads are settled and lived their migratory traditions. The Çayır plateau, the Barak plateau, the Sorkun plateau and the valleys are important pedestrian precincts. Mountaineering festivals are being held on the Melikler plateau for 18 years (Anonymous, 2017).

2. Material and method

The herbal materials of the work have been collected by the author at various dates since 1994. Almost 1000 specimens were collected from the area. After being made according to the techniques of addition, pressing and drying, the author was

put on herbarium cartons and placed in **GUL Herbarium** which is in the Department of Biology (Isparta) of Süleyman Demirel University Science and Literature Faculty. Diagnosis was made by the authors (Davis, 1965-1988; Davis et al., 1988; Güner et al., 2000) from the works of Flora of Turkey and the East Aegean Islands. Findings were obtained within the scope of scientific projects carried out on various dates. These projects were later transformed into scientific publications (Özçelik and Öztürk, 1999; Özçelik and Korkmaz, 2002; Özçelik et al., 2004; Özçelik et al., 2012; 2016; Özçelik and Özhatay, 2005; Serin et al., 2008; Ünüvar et al. 2016). The flora and vegetation taxa that should be monitored and endangered are determined for these studies. the floristic, topographical, climatic and geological structure of the area has been interpreted in order to explain the effects on the agriculture of the local people. The satellite image of the study area is shown on Map 1.

No record of plants collected from the field. A list of the taxa threatened on a global scale, on a European scale or throughout the country, and the hazard categories were determined according to the literature (Özhatay et al., 2005; Eken et al., 2006). However, the collection of plants has been done by us and from general diagnosis books (Davis, 1965-1988; Davis et al., 1988; Güner et al., 2000) of the diagnosis country. The endangered taxa with little or no distress in the danger category have not been added to the list of mountains.

The author's interpretation of the agricultural production effects in the region of Dedegül Mountain. After the flora and vegetation of the mountain and the region were revealed, the geological and geomorphological structure was compared with the plants dominant in the agricultural production of the Lake Region and the results were interpreted.

The flora of the mountain, the vegetation and the threats on its natural geological and topographic structure have been determined by observations. Some suggestions have been made to protect this mountain against the identified threats.



Map 1. View from SATellite of research area (from <https://earth.google.com/web>).

3. Findings and discussion

There are different ecological habitats in Dedegül Mountain. These habitats have been an important factor in the development, spread and diversification of various plants. Dedegül is the richest mountain in terms of floristics of the Lake District. Flora of it is not exactly known. According to our work called "Flora of Isparta"; this mountain is home to at least 900 vascular plant taxa. Approximately 350 of these are endemic. 30 of the endemic are only grown on the mountain of Dedegül. So this mountain is the only address in the world of about 40 plants.

Pinus brutia as a local community, *Platanus orientalis* and *Tilia platyphyllos* along the Aksu stream are widely distributed near the village of Kasımlar. The high sections of the Dedegül Mountains are quite rich in terms of plants. Approximately 40 plant taxa are endemic to the area and its environment.

Plant taxa specialised to the mountain and its environs: *Aubrieta anamasica*, *Alyssum cephalotes*, *Hesperis ozcelikii*, *H. pisidica*, *Ranunculus gueneri*, *Delphinium gueneri*, *Geranium cinereum* subsp. *subcaulescens* var. *pisidicum*, *G. glaberrimum*, *Erodium pelargoniflorum*, *Minuartia umbellifera* subsp. *salbacica*, *Silene guerbuezii*, *S. caramanica*, *S. caryophylloides* var. *echinus*, *S. cariensis*, *S. isaurica*, *S. phrygia*, *S. ruscifolia*, *S. lycaonica*, *S. oreades*, *S. pharmaceifolia*, *S. capillipes*, *S. akmaniana*, *S. deliculata* var. *pisidica*, *Minuartia anatolica* var. *phrygia*, *Herniaria pisidica*, *Astragalus sorgerae*, *Trigonella polycarpa*, *Sempervivum ispartae*, *S. pisidicum*, *Rosa dumalis* subsp. *boissieri* var. *antalyensis*, *Eryngium trisetum*, *Centaurea kizildaghensis*, *Helichryssum chasmolycicum*, *Ballota cristata*, *Nepeta plinux*, *Lamium pisidicum*, *Polygala pruinosa* subsp. *megaptera*, *Verbascum adenocarpum*, *V. sorgerae*, *V. pumilum*, *V. spodiotrichum*, *Rindera dumanii*, *Valeriana oligantha* and *Crocus asumaniae*.

The narrow-spread taxa that grow on the Dedegül mountains but also grow in other areas: *Hesperis matronalis* subsp. *cilicica*, *Thlaspi papillosum*, *Papaver strictum*, *Matthiola montana*, *Isatis cappadocica* subsp. *alyssifolia*, *Hypericum monodenum*, *Silene amana*, *S. sipylea*, *S. leptoclada*, *S. tunicoidea*, *S. cryptoneura*, *S. cariensis*, *Dianthus eldivanus*, *Saponaria syriaca*, *Paronchia davisii*, *Geranium lasilopus*, *Genista burdurensis*, *Trigonella lycica*, *Astragalus barbarae*, *Astragalus panduratus*, *A. sparsipilis*, *Cephalaria lycica*, *Sempervivum brevipulum*, *Sedum hispanicum* var. *planifolium*, *Kundmanniana syriaca*, *Helichryssum heywoodianum*, *Centaurea germanicopolitana*, *Euphorbia isaurica*, *Verbascum pinardii*, *V. cilicicum*, *Sideritis leptoclada*, *Lamium lycium*, *Thymus samius* and *Asyneuma isauricum*.

Although *Silene ruscifolia* were registered, from Kayseri (Pinarbasi) and Sivas provinces they were not found by us, but there was a small area in Gelendost (Isparta).

Silene caryophylloides have very good variation in the mountain.

Sedum hispanicum var. *planifolium* was registered from Kütahya. Dedegül Mountain is the area of second spread. In the mountain, it is growing the best. It is spread by birds.

Minuartia umbellifera subsp. *salbacica* was registered from Denizli. However, varieties of the species are growing abundantly in the mountain.

Plant taxa in the VU (at risk) category in the mountain: *Acer hyrcanum* subsp. *sphaerocaryum*, *Asphodeline turcica*, *Bupleurum davisii*, *Echinops onopordum*, *Eremopoa attalica*, *Erodium pelargoniflorum*, *Gaudiniopsis macra* subsp. *micropyroides*, *Glycyrrhiza asymetrica*, *Hypericum ternatum*, *Iris pamphylica*, *Muscari muscarimi*, *Omphalodes ripleyana*, *Ricotia varians*, *Silene deliculata* subsp. *pisidica*, *Stachys antalyensis*, *Trigonella pamphylica*, *Valeriana oligantha*, *Veronica panormitana* subsp. *baradostensis*, *Ranunculus gueneri* and *Rosa dumalis* subsp. *boissieri* var. *antalyensis*.

Plant taxa in the CR (Critical) category in the mountain: *Stachys chamosericea*.

Plant taxa in the EN (Endangered) category in the mountain: *Campanula antalyensis*, *Cerastium pisidicum*, *Crocus asumaniae*, *Globularia trichosantha* subsp. *longisepala*, *Herniaria piscida* and *Stefanoffia insoluta*.

It is a field where the Mediterranean enclaves (vegetation with foreign origin,) are seen in the region. For this reason, it is a mountain that has links to other regions in terms of geological structure and plant formations. There are a large number of monumental trees in the area (registered Beyçamı by the ministry), and even 600-800-year-old larch forests or remains. *Quercus vulcanica* and *Abies cilicica* subsp. *isaurica* are also present as enclaves. Most of these trees are monumental trees. It is a rare plant from Tertiary (3 rd time) that can reach the day-to-day. For this reason, they are both a relict and an endemic. Along the canyon (Kapiz) is an enclave of European Siberian taxa. There are small remains from these enclaves in the upper parts of the canyon.

Dedegül mountains are the gene center of the rose genus. According to our work; rose genus and *Rosa dumalis* subsp. *boissieri* var. *antalyensis*. *R. dumalis* in the area, a rosehip species, is the highest quality rosehip species in Türkiye. Vitamin C in *R. dumalis* growing the mountain is above of world standards. Dedegül mountain shows a lot of species variation. There are almost 60 rose genotype belonging to 12 species in the mountain. This route must be produced for economic gain (Özçelik vd., 2012; Özçelik, 2013).

We have to think the Dedegül mountain together its surroundings. Especially from Bozburun Mountain and Köprülü Canyon National Park, we can not think separately from the Beyşehir Lake National Park. Among the other bulbous and tuberous plants that we have cultivated, there are Şakayık, Ayıgülü (*Paeonia mascula*), Kardelen (*Galanthus gracilis*, *G. elwesii*), Boynubükük, Gölsoğanı (*Leucojum aestivum*), Ağlayangelin (*Fritillaria* spp.), Çiğdem (*Crocus*, *Colchicum* spp.) and Lale (*Tulipa* spp.) are also abundant and varied in this mountain. Members of the Crassulaceae family are particularly important for the *Sedum* and *Sempervivum* genera, as well as *Populus* and *Salix* genera. *Origanum minutiflorum* is one of the endemic species of the region and is known as Sütçüler kekiği, Aş (Çorba) kekiği, Tota kekiği. We have to think about the Dedegül mountains with its surroundings. Especially from Bozburun Mountain and Köprülü Canyon National Park, we can not think separately from the Beyşehir Lake National Park. Among the other bulbous and tuberous plants that we have cultivated, there are Şakayık/ Ayıgülü (*Paeonia mascula*), Kardelen (*Galanthus gracilis*, *G. elwesii*), Boynubükük/ Gölsoğanı (*Leucojum aestivum*), Ağlayangelin (*Fritillaria* spp.), Çiğdem (*Crocus* and *Colchicum* spp.),) and Lale (*Tulipa* spp.) are also abundant and varied in this mountain. Members of the Crassulaceae family are particularly important for the *Sedum* and *Sempervivum* genera, as well as *Populus* and *Salix* genera. *Origanum minutiflorum* is one of endemic species of the region. It is the most important of Turkey's export. The volatile oil content is about 3% and the use of oil components is very convenient. Türkiye's export is the most important. The volatile oil content is about 3% and the use of oil components is very convenient.

The floristic characteristics of the area are given in Table 1 as a comparison with their surroundings.

Table 1. A comparison of the floristic studies performed in and around the study area.

Research Areas	Total Taxa	Endemism Ratio %	The biggest 3 families*	The biggest 3 genera**	Med. el. %	Ir. Tur. el. %	Avr.-Sib. el. %
Kasnak Meşesi Nature Protection Area (Isparta) (Özen and Fakir, 2015)	442	15,61	Fabaceae, Asteraceae, Lamiaceae	<i>Trifolium, Astragalus, Silene</i>	27,38	9,28	6,33
Yaylabel (Isparta) (Şenal, 2011)	271	13,65	Asteraceae, Fabaceae, Lamiaceae	<i>Silene, Astragalus, Centaurea</i>	25,46	8,86	5,54
Dedegül Mountains (Isparta-Konya) (Peşmen and Güner, 1976)	824	18,69	Asteraceae, Fabaceae, Caryophyllaceae	<i>Silene, Astragalus, Ranunculus</i>	18,57	10,92	4,73
Sütçüler (Isparta) (Özçelik and Korkmaz, 2002)	587	26,20	Fabaceae, Asteraceae, Caryophyllaceae	<i>Silene, Trifolium, Ranunculus</i>	% 29,0	%15,6	% 6,2
Aksu (Isparta) (Özçelik and Öztürk, 1999)	658	25,20	Asteraceae, Lamiaceae, Caryophyllaceae	<i>Silene, Veronica, Astragalus, Centaurea</i>	% 23,1	% 11,4	% 9,2
Barla Mountain (Isparta) (Bekat, 1987)	645	17,05	Asteraceae, Fabaceae, Lamiaceae	<i>Astragalus, Centaurea-Trifolium-Silene-Euphorbia, Veronica</i>	21,65	11,92	3,71
Bozburun Mountain (Antalya-Isparta-Burdur) (Fakir, 2006)	645	16,12	Fabaceae, Asteraceae, Lamiaceae	<i>Silene, Trifolium, Ranunculus</i>	32,1	7,9	5,1
Burdur (Özçelik et al., 2016)	1580	25,31	Asteraceae, Fabaceae, Lamiaceae	<i>Astragalus, Verbascum, Centaurea</i>	-	-	-
Kızıldağ National Park (Isparta) (Mutlu and Erik, 2003).	786	15,72	Asteraceae, Fabaceae, Rosaceae-Poaceae	<i>Ranunculus, Allium, Veronica</i>	16,76	17,56	4,59
Davras Mountain (Isparta) (Özçelik et al., 2001)	415	25,80	Fabaceae, Asteraceae, Brassicaceae	<i>Silene, Veronica, Astragalus</i>	35,0	15,6	5,5
Kovada Gölü National Park (Isparta) (Fakir, 2007)	367	15,25	Fabaceae, Asteraceae, Brassicaceae	<i>Silene, Trifolium, Astragalus</i>	21,52	10,62	4,90
Gölcük Lake (Isparta) (Fakir and Dutkuner, 1999)	227	28,20	Fabaceae, Caryophyllaceae, Asteraceae	<i>Astragalus, Silene, Vicia</i>	21,1	17,6	6,2
Kovada Arboretum (Çetinkaya, 2005)	350	12,3	Asteraceae, Fabaceae, Lamiaceae	<i>Galium Silene, Ranunculus</i>	28,8	14,4	6,8
Beyşehir Lake and its Environs (Konya) (Küçüködük, 1988)	-	10,12	Fabaceae, Poaceae, Asteraceae	<i>Trifolium, Astragalus, Trigonella</i>	18,32	12,40	5,06
Köprülü Kanyon National Park (Antalya-Isparta) (Özçelik et al., 2002)	707	32,50	Lamiaceae, Fabaceae, Asteraceae	<i>Ranunculus, Veronica, Geranium</i>	30,97	10,46	07,07
Yeşildağ-Kurucuova (Konya) (Serin and Çetik, 1984)	512	11,52	Poaceae, Asteraceae, Brassicaceae	<i>Astragalus, Trifolium, Silene</i>	20,89	15,13	4,48
Sultan Mountains (Afyon-Isparta-Konya) (Ocakverdi, 1984; Özçelik and Özhatay, 2005)	587	14,0	Asteraceae, Fabaceae, Poaceae	<i>Astragalus, Silene, Hypericum</i>	12,50	13,0	5,70
Yandağ (Isparta) (Kargioğlu and Ertuğrul, 1995)	729	13,80	Fabaceae, Asteraceae, Poaceae	<i>Salvia, Astragalus, Trigonella</i>	19,80	16,30	3,80
Akşehir (Konya) (Küçüködük and Çetik, 1984)	-	0,80	Asteraceae, Poaceae, Fabaceae	<i>Ranunculus, Juncus, Polygonum, Potamogeton</i>	11,20	25,60	8,80
Derebucak-İbradı-Akseki (Demirelma and Ertuğrul, 2009).	960	17,3	Asteraceae, Caryophyllaceae, Liliaceae	<i>Sideritis, Astragalus, Silene</i>	-	-	-
Isparta (Özçelik and Serdaroğlu, 2000)	2280	28,50	Asteraceae, Fabaceae, Poaceae	<i>Astragalus, Silene, Verbascum</i>	-	-	-

*: The order of three families involving the most taxa; **The order of three genera involving the most taxa; ***: It has been determined by removing it from the related publication. **Med. el.:** Mediterranean element ratio; **Ir.-Turan el.:** Irano-Turanian element ratio; **Avr.-Sib. el.:** Euro-Siberian element ratio.

According to the information received from the people in the region, especially shepherds and forestry; the public believes that Dedegül Çiçeği (*Centaurea bornmuelleri* or *Jurinea* sp.) will bring good luck, and it keeps some of it at home for a while. For many illnesses, tea is brewed and drunk. It is short-lived, rhizomatic, perennial, light blue, whitish-flowering, and even pleasant-smelling. In the place where the tomb of Dedegül is located, it is a rare endemic growing on the rocky slopes between Karagöl and the peak.

There is also Dedegül Çayı (*Cyclotrichum origanifolium*) at the mountain. This plant gives Senirkent the name "Kafaotu, Kafasüpürgesi or Karabaşotu". It grows on damp bare rocks and at high altitudes. The Yaka villagers sells locals from the tops of the village and sells them in Pınar Pazarı of Eğirdir. It is used against diabetes, infectious diseases; it is brewed and drunk for a delicious fragrant tea.

It is a very important economic value and must be cultured. Marsuvan otu / Herdemtaze / Altınotu (*Helichryssum plicatum*) is also an important medical plant in the mountains. Tea is drinking against the urinary tract disorders. It is sold in the neighborhood markets.

This mountain is very important in local agriculture. It is known that the plant geography, ecological conditions and floristic structure of the mountains are important in the selection of the plant to be cultivated. Lakes Region is the center of rose and fruit production in Türkiye. More than 50 % of the fruit trees in Türkiye belong to the family of roses. This success is due to the fact that the Dedegül mountains. It is a genetic center for the rose genus. Almost all of the fruit trees have a few wild forms in this mountain flora.

Some plants that grow naturally on Dedegül Mountains and have high economic importance:

Mushrooms: There are edible mushroom taxa in the mountain. Kuzugöbeği (*Morchella* spp.), Çayır mantarı (*Agaricus campestris*), İstiridye mantarı (*Pleurotus ostreatus*), Domalan / Türüf mantarı (*Tuber* sp.).

Herbaceous plant taxa:

For medical and aromatic purposes: Dedegül çiçeği (*Centaurea bornmuelleri* or *Jurinea* sp.), Altın otu / Marsuvanotu (*Helichryssum plicatum* and other *Helichryssum* spp.), Rezene (*Foeniculum vulgare*), Kekik (*Thymus*, *Thymbra*, *Corydanthus*, *Origanum*, *Satureja* spp.), Bayır çayı/ İncir kekiği (*Origanum majorana*), Acı yavşan (*Artemisia absinthium*), Isırgan otu (*Urtica dioica*, *U. urens*), Şalba/ Bozot (*Salvia tomentosa*), Oğlanotu (*Teucrium polium*), Yarpuz/ Nane (*Mentha spicata*, *M. longifolia*), Adaçayı / Eşekotu / Dağçayı (*Sideritis* spp.), Yılan burçağı (*Arum* spp.), Su teresi /Gerdeme (*Nasturtium officinalis*), Karağan/ Laden (*Cistus* spp.), Salep (*Orchis*, *Ophrys*, *Cephalanthera* spp.), Kantaronotu (*Hypericum* spp.), Ayvadana / Civanperçemi (*Achillea* spp.), Papatya (*Anthemis*, *Tripleurospermum* spp.), Ebegömeçi (*Malva neglecta*, *M. sylvestris*), Yabani soğan (*Allium* spp.), Çöğen (*Gypsophila arrostii* var. *nebulosa*), Sümbül (*Muscari* spp.), Yaki otu (*Epilobium* spp.), Çiğdem (*Crocus* spp.), Gelincik (*Papaver*, *Glaucium* spp.), Sirken (*Chenopodium* spp.), Eşek marulu (*Taraxacum*, *Sonchus* spp.), Güneşik, Karakavuk (*Cichorium intybus*), Topuzluk (*Echinops* spp.), Oğul otu (*Melissa officinalis*), Siğil otu (*Chrysophora tinctoria*), Böğürtlen (*Rubus* spp.), Sığırdili otu (*Anchusa* spp.), Deve dikenini (*Onopordum* spp.), Hardal (*Sinapis arvensis*), Sakız otu (*Chondrilla juncea*), Menekşe (*Viola* spp.), Yabani turp (*Raphanus sativus*), Demir dikenini/ Deveçökerten (*Tribulus terrestris*), Bitirak (*Arctium tomentosum*), Ayrik otu (*Cynodon dactylon*), Yayla çayı/ İnce çayı/ Dağ çayı (*Sideritis libanotica*), Balotu (*Onosma isauricum*), Gelincik (*Papaver rhoeas*), Sinirotu/ Sinirliot / Kırkdamarotu (*Plantago major* subsp. *intermedia*), Abdestbozan (*Sacopoterium spinosum*) etc.

Ornamental plants: Şakayık/Ayigülü (*Paeonia mascula*), Menekşe (*Viola* spp.), Dağ lalesi (*Anemone* spp.), Sarmaşık (*Hedera helix*), Dağ karanfil (*Dianthus* spp.), Keçi biciği (*Michauxia campanuloides*), Erkek Eğreltiotu (*Dryopteris filix-mas*), Kartal eğreltisi (*Polypodium vulgare*), Acı çiğdem (*Gladiolus italicus*), Süzen/ Zambak (*Iris* spp.), Nergiz (*Stenbergia lutea*), Kardelen (*Galanthus* spp.), Ağlayangelin (*Fritillaria* spp.), Lale (*Tulipa* spp.), Gül/ Kuşburnu (*Rosa* spp.).

Food plants: İlabada/ Kuzukulağı/ Evelik/Efelek (*Rumex* spp.), Böğürtlen (*Rubus* spp.), Horozibiği (*Amaranthus retroflexus*), Isırgan (*Urtica dioica*), Tokmekan/ Tokmakan/ Semizotu (*Portulaca oleracea*), Acı çiğdem (*Gladiolus illyricus*), Çiğdem (*Crocus biflorus*, *C. chrysanthus*) Sığır dili (*Anchusa azurea*), Çoban çantası (*Capsella bursa-pastoris*), Çakır dikenini (*Eryngium campestre*, *E. billardieri*), Ebegömeçi (*Malva neglecta*, *M. neglecta*), Hardal (*Sinapis arvensis*), Yabani bakla (*Vicia sativa*), Gıvışganotu (*Silene vulgaris* var. *vulgaris*), Yemlik/ Tekesakalı (*Tragopogon latifolius* var. *angustifolius*, *Scorzonera cana*), Madımak (*Polygonum cognatum*, *P. aviculare*), Körmen (*Allium scorodoprasum* subsp. *rotundum*), Salep (*Orchis laxiflora*; *O. tridentata*), Dağ Eriği/ Çakal eriği (*Prunus divaricata* subsp. *ursina*), Turşu otu (*Echinophora* spp.), Çöven (*Gypsophila arrostii*).

Woody taxa: Essential oil plants and aromatics: Sumak/ Mavru (*Rhus coriaria*), İhlamur (*Tilia argentea*), Yağlı ardıç/ Kokarardıç (*Juniperus foetidissima*), Murt/ Mersin (*Myrtus communis*), Kebere (*Capparis spinosa* var. *spinosa*; *C. ovata*), Karaçalı (*Paliurus spina-christi*), Defne (*Laurus nobilis*), Karağan/ Laden (*Cistus* spp.), Tesbih çalısı/ Ayıfındığı (*Styrax officinalis*).

Wild fruit trees: Doğan ağacı/ Çitlembik (*Celtis australis*), Elma (*Malus sylvestris*), Armut/ Ahlat (*Pyrus* spp.), kiraz (*Prunus* spp.), Dağmuşmulası (*Cotoneaster* spp.), Üvez (*Sorbus* spp.), Payam / Badem (*Amygdalus* spp.), Kuşburnu/ İtburnu (*Rosa dumalis*, *R. canina*, *R. horizontalis*, *R. pulverulenta*, *R. horrida* etc.), Alıç/ Kızılçık/ Geyikeması (*Crataegus* spp.), Kızılçık/ Ergen (*Cornus mas*), Menengiç / Çıtırık (*Pistacia terebinthus*), Çakal eriği (*Prunus spinosa* subsp. *dasyphylla*), Kuşkirazı (*Prunus* spp.).

Forest trees: Karaçam (*Pinus nigra*), Katran/ Sedir (*Cedrus libani*), Dikenardıç (*Juniperus oxycedrus*), Yağlı ardıç/ Kokarardıç (*Juniperus foetidissima*), İledin/ Göknar (*Abies cilicica* subsp. *isaurica*), Şimşir/Akçaağaç (*Acer* spp.), Dişbudak (*Fraxinus* spp.).

Plants for ornamental / landscaping purposes: Papazkühlahı (*Eunymus latifolius*), Karaçalı (*Paliurus spina-christi*), Şimşir/ Akçaağaç (*Acer* spp.), Dişbudak (*Fraxinus* spp.) Karamuk (*Berberis vulgaris*, *B. crataegina*), Kara Çam (*Pinus nigra*), Çınar/ Kavak (*Platanus orientalis*), Pırnal meşesi / Piynar (*Quercus coccifera*), Kasnak meşesi (*Quercus vulcanica*), Söğüt (*Salix* spp.), Kavak (*Populus* spp.), Sandal/ Kocaağaç (*Arbutus andrachne*).

Fruit (apple, cherry, apricot, strawberry, quince, new world, mediterranean / pearl, pear, hawthorn etc.), wild deer, fruits), cutting roses (in Antalya) and oil rose production (in Burdur, Isparta, Afyon) are belonging to microclimatic effects produced by this mountain in the region. Strawberry (especially produced in Şarkikaraağaç in recent years successfully), the apple of Isparta (from Isparta, 22 % of Türkiye's apple production) and Isparta's leader in the production of oil roses. In recent times lily production has also been increased and turned into an industrial product.

Iris germanica (Zambak in Turkish) is produced on the side of Keçiborlu for this purpose. The production of lavender (*Lavandula intermedia*, *L. angustifolia*) is around 300 da in the vicinity of Keçiborlu. Isparta oil rose (*Rosa damascena*) is produced in the region since the time of the Ottoman period. In recent years rose production has reached 35000 da. area. *Papaver somniferum* (Haşhaş in Turkish) has also been produced for medicinal purposes since the Ottoman period. Its production is supervised.

Sugar beans (Akçabelen bean) which is a high quality and brand-name produced in the related area is a result of microclimate that flows around the Akçebelen neighborhood of Beyşehir. There is a project that is protected by the World Bank for the protection of this bean. Protein value is around 18% in normal beans and about 30% in this bean (Özçelik et al., 2016).

Beans, Iğın, Seydisehir, Yalvaç, Şarkikararac, Yenişarbademli, Eğirdir, especially in the region are produced a lot of sugar bean (Şeker fasülye) varieties. Sugar beans carry a geographical sign for the region. Not only sugar beans, but also many kinds of vegetables such as chickpea, cowpea, red kidney beans are produced. This success is thought to be due to the fact that Leguminosae family is from large families in the mountain flora and that microclimate is effective.

Honey production in the region is important as economic. There are varieties such as lavender honey, Yaylabalı (plateau honey, Karakovan honey. It is known that honey quality and production are related to floristic variety and vegetation. The rose honey and pine honey can be produced in the future. The quality of the products in the region is high and therefore there is no sales problem. Honey is also produced in lavender, rose, lily, thyme fields and fruit gardens.

There are many kinds of medical and aromatic plants collected or raised from the mountain. Significant revenues are gained from these crops both in Türkiye and abroad. Most of these plants are herbaceous and geophyt plants, which are commercial values and sold abroad from Türkiye (Özhatay et al., 1997)

Zindan Cave (in Aksu), Pinargözü Cave (in Yenisarbademli, 16 km in length) are the most attractive caves of Türkiye. Especially Karagöl (in 2350 m) is an interesting karst formation. Rock type and karstic structure have been very influential in the formation of caves and boulders. In here, the local people can store the food for a long time. This tradition is still maintained in some parts.

Dedegül mount is the richest area of the Lakes Region in terms of vegetation and animal diversity. It was selected as one of Türkiye's 122 Important Plant Areas At the same time, It is one from an Important Nature Field (Özhatay et al., 2005; Eken et al., 2006).

The rock variety of Dedegül Mountains have been an important factor in the soil diversity of agricultural areas. It is known that after the climate, the soil factors are effective in the growth of plants, and in some plants it is the first factor. The diversity of volcanic rocks in the region has been influential in the formation of fertile agricultural lands.

The main rock in the area is limestone. Locally small blocks of serpentine are visible in the area. It is known that the rock variety is effective in the chemical composition of the water. There are underground lakes in Dedegül mountains. The rivers that come out of the mountain go out with the increase of the water level there, decrease and increase. Because it is the highest mountain and big in the region. It receives the highest rainfall and these rains descend inferior in time. Dungeon cave such as Karagöl, Pinargözü is also nourished by the precipitation. Başpınar, Beyşehir Lake and Eğirdir Lake's water resources from the bottom of this mountain is the extensions of the mass of water to the earth. This wet and damp structure have been influential in the formation of wetlands, meadows and marshes around the mountain. An important part of these mers are the shores of Beyşehir Lake and Yalvaç, Hüyükü, Şarkikaraağaç Göksöğüt, Çiçekpınar; It's around Senirkent Trotter. In these areas, pastures management was projected with the works of the Provincial Directorate of Food, Agriculture and Livestock (Serin et al., 2008) to improve the animal husbandry and to distribute the facilities equally to the people in the rural areas. Significant distances have been taken in these studies. This success is due to the fact that there is microclima and water source which is formed by the related mountain.

4. Conclusion and recommendations

Since the area is located between Central Anatolia and the Mediterranean, the flora and vegetation reflect the characteristics of the Mediterranean and Iran-Turan regions. Mediterranean forests, alpinic steppe, stony slopes and steep rocky vegetation cover vast areas. In the lower parts, maquis communities, plains steppes, red pine (*Pinus brutia*), river-coastal plant communities, agricultural areas; mixed forests of cedar / tar (*Cedrus libani*) and larch (*Pinus nigra* subsp. *pallasiana*), up to 2000 m in height; On the tree border (2000 m), it consists of mountain steppes, juniper (*Juniperus excelsa*), fragrant juniper (*J. foetidissima*) communities and steep rocky vegetation cover.

Plant taxa endemic to the area and its environment: approximately 40,

Plant taxa in the VU (at risk) category in the mountain: 20,

Plant taxa in the CR (Critical) category in the mountain: 1,

Plant taxa in the EN (Endangered) category in the mountain: 6,

Rare and endangered plant taxa in the area; 52,

Number of endangered species on a global scale 1 (*Acer hyrcanum* subsp. *sphaerocarum*); Number of endangered species on European scale 49,

According to the Bern Convention, the number of endangered natural habitats is 5 (West Taurus *Abies cilicica* forests, *Pinus nigra* subsp. *pallasiana* forests, South Anatolian *Pinus brutia* forests, Taurus *juniperus excelsa* forests, Taurus cedar (*Cedrus libani*) forests) (Güner, 2005).

Farming, animal husbandry and forestry are made in the mount. Foliage and vegetable cultivation are carried out in the covered districts. Apple, rose, strawberry is one of the important income sources of Isparta and the region. This success is due to the floristic structure of the Dedegül mountains and the effect of microclimate on the environment.

The area has been the scene of many civilizations throughout history. B.C. Etiler (Hittites) in 4000 BC, Phrygians in 1500 BC Ions in 800 BC Lydians in 600 BC, BC Persians in 450 BC In 190, the Romans, M.S. In 395 the Byzantines were dominant in the region. The dungeon of Aksu is one of these ancient cities (Anonymous, 2017).

After the Malazgirt Victory of 1071, he joined the Seljuk lands in 1142, beginning with the domination of Anatolia and consequently of the locally Türks. During the Seljuk period, Sultan Alaaddin Keykubat built the Kubat-Abad city and made the second capital, saying: "Heaven is here or under this place". This word is still valid for this day and indicates the uniqueness of the area (Anonymous, 2017).

Wild plants have been used as important food in prehistoric communities. B.C. The transition to plant and animal breeding between the years 6000-7000 (Cilalitaş period) reduced the importance of wild plants, but during the famine period wild plants were used as food. In Anatolia, wild apples (*Malus sylvestris* subsp. *orientalis*), Hibiskus (*Malva sylvestris*), Kasnak meşesi (*Quercus ithaburensis* subsp. *macrolepis*) and many other plant foods were used as raw or cooked. The role of these civilizations is great in the cultivation of the region and in agricultural plants.

Today, around 3000 plants are cultivated for food purposes in the world. The number of natural plants used as food is more than 10.000 (Baytop, 1999). According to the 11th volume of Flora of Turkey, the number of plant species in our country is 11.014 and 3.708 is endemic (Güner et al., 2000). Dedegül Mountains are an important center for bulbous, medicinal and aromatic purposes as well as fruit trees.

Mount Dedegül is the highest mountain in the region. It is also linked to other mountains. Thus microclimate was formed in the region and ecosystems came to the foreground. Every ecosystem has its own plants and animals that feed and shelter those plants. In Lakes Region, most of the plants are grown in this mountain. People around the area are more likely to benefit from the flora than other places. Thyme, sage, caravan etc. It is collected and sold for commercial purposes. Boynubükük / Gölsöğanı (*Leucojum aestivum*) only grows in an area on the edge of this mountain and is protected by the Nature Conservation and National Park Directorate. In MAREM, located in Eğirdir, experiments on reproduction of this plant have been made. The symbol of the EXPO 2016 Fair held in 2016, Ayıgülü / Şakayık (*Paeonia mascula*) grows best and best on this mountain. The people of the region depend on agriculture for the first time. Almost all of the plants produced in agriculture grow naturally in this mountain. Therefore, this seedling / breeding, rootstock etc. is obtained. In addition, the presence of the wilds of agricultural plants to be produced on a mountain is an indication of the success of the cultivation of that plant group in the relevant area. Irrigation and water features are very important in agriculture. In both drinking water and agricultural irrigation, the water reserve of the mountain concerned is quite significant and important. It is known that the freshwater resources are increasingly decreasing in our country and the importance of it is increasing.

The sources of the floristic richness in the area is due to its mikroklima, soil and rock properties. The fact that our study area is mainly influenced by the Mediterranean phytogeographical region, although the endemics of Türkiye are mostly in the range of 1000-2000 m, the fact that most of the cultivation is carried out at these heights is the most important factor in the low rate of endemism. The excessive number of taxa may be another factor that reduces the endemism rate.

Although the Long Period Development Plan (UDGP) of the Beyşehir Lake National Park exists, the plan is not implemented. Our idea is that; the private company that prepared the plan probably drafted the plan depending on the literature to reduce the cost and the experts in the field did not review it. Therefore, the plan has no provisions.

Categories of Hazard and Status of Protection: Only a small part of Dedegül Mountains are protected because it is included in the scope of Beyşehir Lake National Park. There is no protection status for the other part. Despite the fact that the area is very important, it is very unfortunate that there is no protection status. For this reason, the destruction has been made clear in recent years. Marble and mines are opened by taking advantage of legal space and wildlife is damaged. The change of topography and the alteration of microclimate due to vegetation is a threat to agricultural production, underground and super fresh waters and biodiversity on the ground. It is suggested that state and national care should be taken to protect all natural structures, especially topographic changes, up to the taking of the area protection status.

Local people living in or around protected areas such as National Park, Nature Conservation Area, and Protected Area are opposed to areas that are protected by complaints from their restrictions on their movement. While maintaining biodiversity in the local population, it is widely believed that the human needs of the people are not considered enough. However, biodiversity is health, education, economy. The only way to overcome this misconception and protect biodiversity is again education, project, skilled human power.

The area is the target of biotools.

Every year, there are aliens who smuggle in this area. Local guides should be given to foreign tourists and the aims of the tourists should be well established. Especially in ecotourism, the danger of biofuels is higher. Consciousness of the local people is important.

Excessive grazing and cutting trees are other important threats. But the above threats are of higher priority. The cut is usually carried out by the General Directorate of Forestry. It is very damaging to the area. The removal of the historic larch

forests in this way causes a new structure in the ecological structure. It changes the flora and vegetation. It is estimated that the number given in Table 1 is increased by at least 50 species and 20 endemic taxa in the mount.

The effects on the local agriculture of Dedegül Mountains can be summarized as follows:

There are many medical and aromatic plants growing in the mountains. These plants are collected from nature or produced and contribute to the economy and health of the local people. The most important of these is undoubtedly the Milking Cane.

Fruit farming is leading in local agriculture. Especially strawberry, apple, quince, quince, rose, rosehip, cherry, plum, pear etc. It grows wild in the mountains. In the same way grape (grape), fig (nut) also naturally grows in the relevant area. This situation indicates that such fruit plants are the natural spreading area and ecologically the most suitable growing area in the region.

There are many wetlands around the mountain. The importance of wetlands is increasingly understood. Some of these areas are considered meadow-pasture. This situation is also an important contribution to local animal husbandry.

Source streams such as Aksu, Başpınar and Pınargözü are important services in both drinking water, agricultural irrigation and fishing. Fish farms in Aksu are fed from this source.

The knowledge and experience inherited by the ancient civilizations in the region are also important in the food and agriculture culture. When all the features are combined, the Seljuk Sultan reminds the words of Alaaddin Keykubat: "Heaven is here, or underneath." Protecting the area is very important for this reason.

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