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Biodiversity in the Lakes Region (Türkiye) and its Agricultural Importance

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Abstract: Flora of Lakes region has not been fully worked out. Especially Burdur and Denizli have not been fully reflected in the literature since they have been studied less than our other vilayets. According to the results of the study; 406 (27%) in Isparta; 370 (22 %) in Burdur; 400 (18 %) in Denizli; 429 (29%) in Konya and 468 (32%) in Antalya were understood to be natural distribution of endemic plant taxa. The number of endemic plant taxa belonging to 53 families is 950. 530 taxa of them spread show in the region more than one. It is estimated that for each province will be added at least 15% more endemic taxa to this number.

Vertical distributions of the endemic taxa: 78 taxa (8%) between 0-500 m; 31 taxa (3%) between 500-1000 m; 91 taxa (10%) between 1000-1500 m; 59 taxa (6%) between 1500-2000 m; 29 taxa (3%) between 2000 and 2500 m; 10 taxa (1%) with 2500 m upper and 645 taxa (69%) with variable altitudes.

Flowering months of taxa: 1-3: 5 taxa (1%); 3-6: 333 taxa (36%); 6-9: 516 taxa (55%); 9-12: 12 taxa (2%) and unknown 44 taxa (5%). Gymnosperms (open seeded) and ferns were identified as 4 taxa (1 %).

The IUCN threat categories of the relevant taxa are: LR (cd) 127 taxa (13%); LR (nt) 78 taxa (8%); LR (lc) 288 taxa (30%); VU 176 taxa (19%); CR 41 taxa (4%); DD 16 taxa (2%); EN 168 taxa (18%) and 56 non-endangered taxa (6%).

Local endemics that have economic importance in the region are ***Origanum minutiflorum, Sideritis erythrantha, Ballota cristata, Dorystoechas hastata, Rosa dumalis*** subsp. ***boissieri*** var. ***antalyensis, Muscari bourgaei, Orchis anatolica, Liquidambar orientalis, Abies cilicica*** subsp. ***isaurica.*** Attention should be paid to the protection-using balance of these taxa. Sectoral stakeholders should be made more conscious. It should be sought the way to receive culture the taxa.

Approximately 120 vascular plants of the Lakes Region are candidate to be the industrial purposing. These important plants in the region are as follows; Poppy (***Papaver somniferum***), Caper (***Capparis*** spp.), Centaury (***Hypericum*** spp.), Rose/ rosehip (***Rosa damascena, R. canina, R. dumalis, R. alba, R. semperflorens, R. versicolor, R. borboniana, R. centifolia, R. gallica***), Lavander (***Lavandula stoechas, L. angustifolia*** and ***L. intermedia***), Sütçüler oregano (***Origanum minutiflorum***), Dedegül tea/ Kafaotu (***Cyclotrichum origanifolium***), Special-mint (***Calamintha nepeta***), Melissa / Lemon balm (***Melissa officinalis***), Baby's-breath(***Gypsophila arrostii*** var. ***nebulosa***), Sahleb (***Orchis, Ophyris*** and ***Dactylorrhiza*** spp.) Blackberry (***Rubus*** spp.), Terebinth (***Pistacia terebinthus***), Carnation (***Dianthus*** spp.), Coriander (***Coriandrum sativum***), Hibiscus (***Alcea*** and ***Althaea*** spp.), Fennel (***Foeniculum vulgare***), Love-in-a-mist (***Nigella sativa, N. damascena***), Dill (***Anethum graveolens***), Mint (***Mentha*** spp.), Rosemary (***Rosmarinus officinalis***), Thyme (***Thymus, Origanum, Corydothymus*** etc.) Linden (***Tilia*** spp.), Poplar (***Populus*** spp.), Willow (***Salix*** spp.), Fıstıkçamı/ Pine (***Pinus pinea***), Pumpkin/ Gourd (***Cucurbita, Laganeria and Luffa*** spp.) etc.

Göller Yöresi'nde (Türkiye) Bitkisel Biyoçeşitlilik ve Tarımsal Önemi

Anahtar Kelimeler
Flora,
Biyoçeşitlilik,
Tarım,
Göller Yöresi,
Ekonomi

Özet: Yörenin florası tam olarak araştırılmamıştır, Özellikle Burdur ve Denizli, diğer vilayetlerimizden daha az çalışılmış olmalarından dolayı literatüre tam olarak yansıtılamamıştır. Çalışmanın sonuçlarına göre; Isparta'da 406 (% 27); Burdur'da 370 (% 22); Denizli'de 400 (% 18); Konya'da 429 (% 29) ve Antalya'da 468 (% 32) endemik bitki taksonunun doğal dağılış gösterdiği anlaşılmıştır. 53 familyaya ait endemik bitki taksonu sayısı 950'dir. Bunların 530 taksonu bölgede birden fazla lokalitede yayılış göstermektedir. Her il için bu sayıya en az %15 daha fazla endemik takson eklenebileceği tahmin edilmektedir.

Endemik taksonların dikey dağılımı: 0-500 m arasında 78 takson (% 8); 500-1000 m arasında 31 takson (% 3); 1000-1500 m arasında 91 takson (% 10); 1500-2000 m arasında 59

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takson (% 6); 2000-2500 m arasında 29 takson (% 3); 2500 m ve üstü rakımlarda10 takson (% 1); değişken rakımlarla 645 takson (% 69)'dur.
Florada çiçeklenme ayları: 1-3: 5 takson (% 1); 3-6: 333 takson (% 36); 6-9: 516 takson (% 55); 9-12: 12 takson (% 2) ve bilinmeyen 44 takson (% 5). Gymnospermler (açık tohumlu) ve eğrelti otları 4 takson (% 1) olarak tespit edildi.
İlgili taksonların **IUCN tehlike kategorileri** şunlardır: **LR** (**cd**) 127 takson (% 13); **LR** (**nt**) 78 takson (% 8); **LR** (**lc**) 288 takson (% 30); **VU** 176 takson (% 19); **CR** 41 taksonu (% 4); **DD** 16 takson (% 2); **EN** 168 takson (% 18) ve 56 tehlike altında olmayan takson (% 6).
Bölgede ekonomik önemi olan endemikler: ***Origanum minutiflorum, Sideritis erythrantha, Ballota cristata, Dorystoechas hastata, Rosa dumalis*** subsp. ***boissieri*** var. ***antalyensis, Muscari bourgaei, Orchis anatolica, Liquidambar orientalis*****,** ***Abies cilicica*** subsp. ***isaurica***. Bu taksonların koruma-kullanma dengesine dikkat edilmelidir. Sektörel paydaşlar daha bilinçli hale getirilmelidir. Bu taksonları kültürü almanın yolları aranmalıdır.
Göller Yöresi'nde yaklaşık 120 damarlı bitki taksonu endüstriyel bitki olmaya adaydır veya endüstriyeldir. **Yöredeki bu önemli bitkilerden bazıları şunlardır**; Haşhaş (*Papaver somniferum*), Kebere (***Capparis*** spp.), Kantaron (***Hypericum*** spp.), Gül / Kuşburnu (***Rosa damascena, R. canina, R. dumalis, R. alba, R. semperflorens, R. versicolor, R. borboniana, R. centifolia, R. gallica,),*** Lavanta/Karabaşotu (***Lavandula stoechas, L. angustifolia*** ve ***L. hybrida*** vs.), Sütçüler kekiği (***Origanum minutiflorum***), Dedegül çayı / Kafaotu (***Cyclotrichum origanifolium***), Hasnane (***Calamintha nepeta***), Oğulotu/ Melissa (***Melissa officinalis***), Çöğen (***Gypsophila arrostii*** var. ***nebulosa***), Sahleb (***Orchis, Ophyris*** ve ***Dactylorrhiza*** spp.) Böğürtlen (***Rubus*** spp.), Menengiç (***Pistacia terebinthus***), Karanfil (***Dianthus*** spp.), Kişniş (***Coriandrum sativum***), Gülhatmi (***Alcea*** ve ***Althaea*** spp.), Rezene (***Foeniculum vulgare***) Çörekotu (***Nigella sativa, N. damascena***), Dereotu (***Anethum graveolens***), Nane (***Mentha*** spp.), Biberiye (***Rosmarinus officinalis***), Kekik (***Thymus, Origanum*** and ***Corydothymus*** vb.), Ihlamur ***(Tilia*** spp.), Kavak (***Populus*** spp.), Söğüt (***Salix*** spp.), Fıstıkçamı (***Pinus pinea***), Kabak/ Sukabağı/Lif kabağı (***Cucurbita*** ve ***Laganeria, Luffa*** vs.) vb.

1. Introduction

Since the time of creation, mankind has paid attention to the environment. Meeting the nutritional, health and shelter needs of people throughout history has been a major problem. Most of the people did not look at the plants, did not examine them, only saw them. Some humans classified the plants to benefit. Useful and harmful, medical-aromatic; toxic-healing; food, timber, furniture purposes etc. They went to produce the plants they thought were very important so that natural and agricultural plants emerged. Among all plants, those with high economic value and high added value are being called "**Economic Plants**".

Wild (natural) plants are cheaper than cultivated plants and are more suitable for health. They are also ecologic and grow in the most suitable environment. They are the most important source of vitamins, antioxidants, minerals and nutrients. They are the ancestors of the cultivated plants. The first group used the plants for the treatment of many diseases. At the beginning of these plants are coming Medicinal and Aromatic plants. These group plants are also used in perfumery and cosmetics as skin care products. As their usage becomes widespread, they become industrial plants and they are switched to mass production. Drugs, food, spices, dyes, fiber, forage plants, furniture and decor plants are at the head of industrial plants.

Türkiye is a rich country attracting in the world with its biological diversity. For this reason, it is likened to an open air museum. This wealth is only in plants, species, breeds etc. but also the ecosystem diversity. The fact that the plants on the list are economically important. For example, the legume family in Flora of Turkey [1, 2] was written as a single volume. It is a family based food and feed plants. The wheatgrass (Poaceae) is the same. The family of Ballıbabagiller (Lamiaceae) and Kerevizgiller (Apiaceae) are also ones of the families are rich in medicinal and aromatic plants. These groups are large families in terms of number of taxa in Türkiye. Similarly, plant species developed in Türkiye, which are rich in the number of taxa, are generally economically valuable plant groups. **Rosaceae, *Astragalus*** (Geven in Turkish)**, *Onobrychis*** (Korunga in Turkish)**, *Salvia, Sideritis, Nepeta*** (Adaçayı in Turkish)**, *Trifolium*** (Üçgül in Turkish)**, *Verbascum*** (Sığırkuyruğu in Turkish)**, *Olea europea*** (Zeytin in Turkish), ***Hypericum*** *(*Kantaron in Turkish) ***Cyclotrichum origanifolium*** (Kafaotu or Dedegülçayı in Turkish), ***Papaver*** spp. (Gelincik in Turkish). Samples can be duplicated.

The Mediterranean region is the center of medicinal and aromatic plants. In the oramental plants, families Rosaceae (Gülgiller), Caryophyllaceae (Karanfilgiller) and Scrophulariaceae (Sıracaotugiller) are rich plant groups of Türkiye [1, 2].

The gene center of wild roses is identified as Dedegül Mountain (Isparta-Konya) in the Lakes region. Afyon /Haşgeş (***Papaver somniferum***) is an important medicinal raw material. Its agriculture is based on very old ones in the region. Afyonkarahisar has been given a source of inspiration for the name. Pamuk, Cotton (***Gossypium hirsutum***) is an important fiber plant of the Turks brought from Central Asia. It has been produced for centuries in the Mediterranean region. Kenevir, Hemp (***Cannabis sativa***) is also an important plant produced in the region for fiber purposes. Karpuz, Watermelon (***Citrullus lanatus***), Hıyar, Cucumber (***Cucumis sativus***) are the plants brought from Central Asia [3].

In recent times, there has been an increase in the number of natural plants in each area. The researches on the traditional use of plants have also increased significantly [4-8].

2. Material and Method

From 1994 year to the present day, works on the flora of the natural areas in the Lakes Region [9-13], their vegetations were carried out on medicinal and aromatic plants, field weeds [14] grown in agricultural areas. Floras of the provinces [7, 8; 12-14] were excluded. The collected plant samples were pressed according to the method, dried and adhered to their cartons. After the diagnosis [1, 2] into **GUL Herbarium** in Süleyman Demirel University. Some examples were given to **GAZI Herbarium**. Information and literature on local flora (medical, aromatic, poisonous, food, dye, fiber plants, etc.) for economic purposes in flora [15-17]. In addition, industrial facilities operating food, medical, aromatic plants on the site were visited. The products have been examined. In this report, natural flora, field weeds are analyzed and plants which have an important place in the cultivation of the region are listed by being interpreted with ecological conditions. Information about their economic importance and specific values were given. The ones important for the area were identified. Some proposals have been made to increase economic returns in agricultural production. In local plant names with the English name was written in general. The names of plants in Latin in the text were written fully for the first time, shortened by the initial letter in again writing and their authors of plants not written. Relations between the flora of the mountains and the well-grown agricultural plants of Lakes Region were interpreted and some suggestions were made.

3. Results and Discussion

Biodiversity means the richness of plant and animal species and variety richness within species. The Flora of Türkiye has a floristic richness as much as a continent one. It is also like an open air museum. From an economic point of view, the majority of the Flora of Türkiye is composed of high-economic species such as drugs, food, spices, and paint. Plant diversity of the Lakes Region has been determined to a large extent. 2300 and 1600 vascular plant taxa grow in Isparta and Burdur, respectively. The flora of Konya, Denizli, Antalya and Afyonkarahisar were adequality not studied as far as those of Isparta and Burdur.

In the Lakes Region, a rich flora has emerged depending on the climate, soil and rock varieties. It is known that the region is one of the important plant differentiation centers of Türkiye. Many plants that have escaped from natural flora to agricultural areas have been spontaneously cultivated. Others were grown in the region by bringing them from natural flora or other areas. Microclimate, rocks, soils, flora, vegetation and human endeavors have all been influential in the success of agriculture in the region. From the surrounding volcanic rocks, vast mineralized loamy soils have formed. The most important of the volcanic rocks is pumice and boron. It is known that this material is effective in fertile soil formation. There are various minerals in the structure of the rocks in the region. The mineral amount and varieties that the plant needs is in these rocks. Well-developed economic plant groups in the region and their relationship with flora are described below:

3.1. Food plants

Vegetable and fruit farmings are common in the region. There are a large number of naturally occurring taxa belonging to the Solanaceae family. Poaceae and Fabaceae place in first three families in natural floristic research areas in general. Plants that are cultivated in the region are provided with a natural flora, both taxon-based and diversity-based. These two large families are the most important group of agricultural plants in Türkiye.

Kebere/ Kapari, Capper (***Capparis*** spp.): Although they are perennial plants and have been in Türkiye for many years. Their importance has been understood in recent years [18]. Beside being evaluated as vegetable, it is used abundantly in medicine, cosmetics, paint and feed industry in many world countries. In Türkiye and in the region are two species of the capers as ***Capparis spinosa*** and ***C. ovata.*** Buds, berry, and root bark of them are known as diuretics, constipation and forceps. Used part economically of them is mainly buds. The buds are generally used for food. The flower buds collected from nature in Türkiye, between 1995 and 2000, it started to take an important place in exports with an average production amount of 5000 tons and a value of 15 million dollars. The lamb is considered to be a suitable plant in economic evaluation of areas

considered as non-agriculture [18]. In the food industry, ***C. ovata*** is the most preferred.

Salep, Sahlep (***Orchis, Ophyris, Cephalenthera*** and ***Dactylorhiza*** spp.): An important part of the diversity of sahlep plants is in the Lakes Region. But what kinds of genres exist in the area? The population sizes of species are also not specific. The tubers are used for food and medical purposes. It is common sense that it gives a feeling of satiety and is useful against gynecological diseases. In the Bucak district, sahlep tubers are collected for commercial purposes. The most important place in the production of sahlep in Türkiye is Bucak city. Bucak sahlep (made from ***O. anatolica***) is the most famous. Bucak district is also a center where other medical and aromatic plants are collected and traded. Approximately 120 million sahlep tubers per year are removed in Türkiye.

Zeytin, Olive (***Olea europea*** subsp. ***sylvestris***): The motherland is considered Eastern Mediterranean, ie Türkiye. Wild olive grows wild in the Mediterranean region up to 800 m. In Çandır (Sütçüler), Senir (Keçiborlu) and Antalya it naturally grown on the sides. Oil is obtained from both fruits and seeds. The amount of fat in the fruit is about 12 %. Oil droplets are collected in mesocarp cells. It is possible to produce oil from both fruit and kernel (seed). Olive is a valuable food ingredient at the same time. The most important of these is the raw material of the medical material. Bioactive substances have recently been obtained from olive black water (waste). *Oleuropein* is one of these. Leaves have higher bioactive content in terms of oleuropein.

Isparta Yağgülü, Rose (***Rosa damascena***): Rose production in Türkiye is done only in the Lakes region. Approximately 12,000 families have income from this sector. About 12,000 tons of rose flower are processed annually. After this process, about 2000 kg of rose oil is produced. The economic value of this oil is about 70,000-90.000 TL / kg. It is nearly exported to France all of them. In the food sector, it has an important place in the production of confectionery. Ice cream, Turkish delight, vinegar, syrup etc. is used as a raw material for roses or as a food additive in about 20 food products. It is also used for medical and cosmetic purposes. It is used in approximately 120 crops of cosmetics. Food stain was produced by us from the liquid liquid pulp. She joined in the confectionery and soft drinks. It gave positive results. In addition, vinegar production experiments were made. While vinegar from the flower can be produced, a vinegar of poor quality can be produced. As the color gets darker, the ability of the roses to grow is increasing. Therefore, we think that black roses can be produced better than paint.

Black cabbage is an important food as well as boiling paint is an important food additive. Buckthorn (Rhamnus catharticus) is a plant produced during the Ottoman period to produce fruits. In the same way, quality food dyes are obtained from the cranberry (Cornus mas) fruits.

Yerelması, Topinambour (***Helianthus tuberosus***): It is a food that is widely produced and consumed in the region and is eaten raw, especially for diabetes. Its tubers are sold in public markets and in transit. It is also planted in home gardens for ornamental purposes.

In agriculture, both wild and cured local culture plants are very important. In Ayazmana cemetery (Isparta) there are approximately 2000 lenght chestnut trees. These trees are planting. However, they are such a development that they have been a chestnut forest. This forest has been very important in terms of health due to its honey production, landscape value and the area of occupation. It is an agricultural biodiversity that is very useful, especially for sugar.

Crocuses in the region are grown abundantly in nature. Inspired by this, saffron production (***Crocus sativus***) was started about 10 years ago. Production is very successful. We hope to continue. Also the Groundworm (***Helianthus tuberosus***) and sunflower (***Helianthus annuus***) in the region are produced. These plants both give the environment a natural landscape appearance and also contribute to the production of honey and human health. Artichoke produced in Turkey and that most of these areas where we anticipate consumed in this region. It is known that the localization is good for diabetes, eaten raw and eating. Safflower (***Carthamus tinctorius***) is the same way. The success of these species in the natural flora Asteraceae family is one of the first 3 lies in the family. At least 5 species of wild aspirates and their relatives are naturally grown in the region.

Böğürtlen/Blackberry (***Rubus fruticosus***): It is produced for household needs in home gardens, specially for syrup and fresh food. Thorny, uneven; fruit is spherical and long type. Fruit, roots and leaves are used against diabetes. Ahududu, Raspberry (***R. idaeus)*** is also used and produced for the same purposes. A large number of *Rubus* species naturally grow on the mountain of Dedegül. It is a species that is produced in the region for both landscape and food purposes. There are a large variety of species grown on roadside refuges, in home gardens and in parks. Its fruits and leaves are protection against diabetes. Fresh fruits are eaten or syrup made. In Antalya, there are farmers who produce folks to sell tourist hotels. Especially the Blackberry Black Sea region grows naturally in all regions in Türkiye. In recent years, there are a

number of blackberry varieties produced by breeding.

In the local public markets, especially in the first spring season, the villagers sell their plants from nature. We would like to draw attention to some of these: Tekesakalı/Yemlik(***Scorzonera*** and ***Tragopogon*** spp.), Güneğik (***Cichorium intybus***), Toklubaşı (***Stachys*** sp.), Karakavuk (***Chondrilla juncea***), Sorrel / Alamancar (***Rumex*** spp.), Suteresi/Gerdeme (***Nasturtium officinale***), Isırgan/Dalağan(***Urtica dioica, U. urens***) are some of them. Small seedlings are collected from the poppy (***Papaver somnifferum***) fields and the plant is rare. Small plants are also sold in markets. Fruits and fresh branch and infloresens parts of Menengiç/Çöğre (***Pistacia terebinthus***) are used. They are consumed as spices, salad and dew. Some of these are chewing gum plants. We know that gum was produced and used for medical purposes. We continue to work on chewing gum plants. These aims not only for human health, but also for animal diseases. Most animal diseases are treated with medicines made from wild plants. For this reason, both some of them grow naturally and are grown.

From fruit trees; Kızılcık/ Ergenkirazı, Cornelian (***Cornus mas***), Ayva, Quince (***Cydonia oblonga***), Ceviz, Walnut (***Juglans regia***), Kiraz, Cherry (***Cerasus avium***), Vişne, Cherry (***Cerasus vulgaris***), Elma, Apple (***Malus sylvestris***), İncir/Yemiş, Figs (***Ficus carica***), Karadut, Black mulberry (***Morus nigra***), Alıç, Hawthorn (***Crataegus*** spp.), Kuşburnu, Rosehip (***Rosa*** spp.), Asma/ Üzüm, Grape (***Vitis vinifera***), Hünnap, Jujube (***Ziziphus jujuba***), Ahlat, Wild pear (wild ***Pyrus*** spp.), Muşmuşa/ Beşbıyık, Medlar (***Mespilus germanica***) etc. are widely produced in the region.

There are some families in the region that are important for bee farming and honey production. **Important families and Turkish names are mentioned below**: Ballıbabagiller (Lamiaceae), Maydanozgiller (Apiaceae/ Umbelliferae), Gülgiller (Rosaceae), Baklagiller (Fabaceae), Papatyagiller (Asteraceae), Ladengiller (Cistaceae), Ayıfındığıgiller (Styracaceae), Hodangiller (Boraginaceae), Sütleğengiller (Euphorbiaceae), Ihlamurgiller (Tiliaceae), Apiaceae (Kerevizgiller), Ebegümecigiller (Malvaceae) and Çamgiller (Pinaceae) are some of these.

In the past years, these aims have been expanded while mushroom picking has been medical and nutritional. However, the concern that people have about mushroom poisoning limits the amount of consumption. In the country, almost 40 edible mushroom species are collected for cooking purposes and 25 of them are traded or exported abroad. Kuzugöbeği (***Morchella esculanta*** var. ***rotunda, Morchella conica*** var. ***deliciosa***), Domalan (***Rhizopogon luteolus, Russula delica*** etc.). The mushrooms that have high economic importance and are eaten in the Lakes Region. Kuzugöbeği mushroom is sold fresh from 80-100 TL, shaded dried from 800-1000 TL/kg. Since the production is abundant in the region, it is dried and powdered in factories. Powder of it is sold in the name of "Mantar tozu". The price of fungus powder is approximately 150 TL. **White mushrooms:** Dolaman (***Rhizopogon luteolus***), İstiridye mantarı/ Kavak/Kayın mantarı (***Pleurotus ostreatus***) is found both locally and culturally. Burdur producing İstiridye mantarı can sell fresh **İstiridye mantarı** edible mushrooms from 15-30 TL / kg in the neighborhood markets. On the marine side, for medicinal purposes, on the side of Korkuteli (Antalya), the production of mushrooms for culinary purposes has recorded important steps. There are only restaurants in Denizli that produce food on mushrooms. **Yellow mushrooms:** Çıntar (***Lactarius deliciosus***), in some places also called Kanlıca Mantarı. These mushrooms are cooked and eaten. **Black mushrooms:** Truffle mushroom (***Tuber*** spp.) is also an important herbal value. Some countries produce this mushrooming and gain serious economic benefits. 2000 TL / kg on the domestic market. It can be sold in Europe up to 3000 Euros. The people of the Lake Region can not make use of this mantel sufficiently. Most mushroom trade is done in Burdur province.

Almost everywhere in Türkiye, the mushrooms (***Morchella*** spp.) are collected from nature and consumed or sold every year. In 2014, the "Kuzu göbeği" mushroom, which is 60-100 TL / kg, is an important source of income for local people. Most places traders come and buy their freshes from the villagers. In the same way, "Çıntar" mushroom is sold in abundance in Burdur and Muğla environs especially on roadsides. It is known to the people of the region that this mushroom scorpion, bee etc. against putting poisonous animals, it is beneficial. In recent years, mushroom production in the region has increased. ***Agaricus bisporus*** (edible mushroom, cultured mushroom) was started to produce oyster mushrooms. Experiments are also carried out for the production of lamb breasts and mushroom.

As side effects of medicines are learned and health problems increase, the functional tendency towards alcoholic beverages increases and the products are diversified. Functional foods gradually become a sectoral structure. The economic value of these foods is several times that of normal foods.

Important functional food plants that can be produced for industrial purposes: Geyik elması (***Eriolobus trilobatus***), Alıç /Yemişen (***Crataegus*** spp.), Kuşburnu (***Rosa*** spp.), Hünnap (***Ziziphus jujuba***), Beşbıyık (***Mespilus germanica***), Frenküzümü (***Ribes rubrum***), Kestane (***Castanea***

sativa), Kiraz (***Prunus avium),*** Elma (***Malus sylvestris***), Böğürtlen (***Rubus fruticosus),*** İdris/ Mahlep (***Cerasus mahalep***), İğde (***Elaeagnus angustifolia***), Yalancı iğde (***Hippophae rhamnoides*** in only Antalya) Yerelması (***Helianthus tuberosus,*** Gül (***Rosa damascena***), Kebere (***Capparis*** spp.), Kanola (***Brassica napus),*** Salep **(*Orchis, Ophrys*** and ***Dactylorrhiza*** spp.**).** Tirmis/Termis(***Lupinus albus***) seeds in brine are sold widely in local bazaar.

Oil plants: Zeytin, Olive **(*Olea europea*),** Menengiç/ Çöğre **(*Pistacia terebinthus*),** Susam **(*Sesamum indicum*),** Ayçiçeği **(*Helianthus annuus*),** Pamuk **(*Gossypium hirsutum*)** [19].

Food dyes: Aspir **(*Carthamus tinctorius*),** Şekerci boyası **(*Phytolacca americana*),** Gül **(*Rosa odorata, R. damascena*),** Siyah üzüm/Asma **(*Vitis vinifera*),** Sumak/ Mavru **(*Rhus coriaria*),** Kırmızı pancar **(*Beta vulgaris*** var. ***cruenta*** etc.**),** Domates, Tomato **(*Lycopersicon esculentum*)** [5]. Karadut **(*Morus nigra*),** Kiraz **(*Prunus avium*),** Nar **(*Punica granatum*), Soğan (*Allium cepa*), Sarımsak (*Allium sativum*), Quince(*Cydonia oblonga*), Currants (*Ribes rubrum*)** etc.

Important functional aromatic plants from an industrial point of view: Laden/ Pamukluk otu/ Karağan (***Cistus creticus***, ***C. salviifolius***), Püren/ Funda (***Erica arborea***), Tıbbi Adaçayı/ Şalba (***Salvia officinalis, S. tomentosa, S. argentea, S. aethiopis***), Kekik (***Tymbra spicata*** and ***Thymus*** spp., ***Satureja*** spp.), Mercanköşk/ Kekik (***Origanum minutiflorum, O. majorana, O. sipyleum, O. onites***), Gülhatmi ***(Althea officinalis*** and ***Alcea*** spp.), Kafaotu/ Kafasüpürgesi/ Karabaşotu/ Dedegül çayı **(*Cyclotrichum origanifolium),** Çörek otu/ Karacotlam (***Nigella sativa***), Hasnane (***Calamintha nepeta***), Anason ***(Pimpinella anisum*),** Kişniş (***Coriandrum sativum)*,** Anason (***Pimpinella anisum)*,** Rezene (***Foeniculum vulgare)*, Dereotu (*Anethum graveolens*),** Kimyon (***Carum carvi)*,** Susam ***(Sesamum indicum),*** Nane ***(Mentha*** spp.), Beyşehir Çöveni (***Gypsophila arrosti*** var. ***nebulosa***) [14, 20-24].

3.2. Feed crops

Animal feeds are plants or special blends that hold an important place in the feeding. For example, Çakşır/Çaşır (***Ferula, Prangos*** spp.) from Apiaceae and some Fabaceae species are fresh, although they are poisonous, they are harvested at the end of the growing season and fed to the animals by being dried and mixed with other foods. So, in animals, sickness is reduced, reproductive speed is increased etc. So some essential oil plants have aphrodisiac effects. Essential oils of some medicinal and aromatic plants, such as Biberiye/ Kuşdili, Rosemary (***Rosmarinus officinalis***), Kekik/ Thyme (***Thymus*** and ***Origanum*** spp., ***Satureja*** spp., ***Satureja*** spp.) and Lavanta/ Lavender (***Lavandula*** taxa) which are confined to fish feeds, open the fish's appetite, as it grows faster. Breeding can be increased in all animals by eating lavender oil and rose pudding.

Animal breeding can not be done without feed plants. Natural meadows and pastures are the areas where quality forages are abundant and cheapest produced. In many countries where conscious livestock production is made in pastures form the backbone of fattening. Feeding rate is considered an important measure of your development rate. Because if livestock is not produced, livestock must be made with fraudulent food. There are important grazing areas in the Lakes Region. These areas are mostly located around Şarkikaraağaç, Yalvaç, Eğirdir, Aksu, Senirkent (Isparta), Beysehir (Konya), Düger, Bucak, Ağlasun, Yeşilova, Karamanlı (Burdur). In the pastures, there are regular grazing plans, fair distribution of herbage yield to animal producers and breeding programs of degraded beverages.

Danaayağı (***Arum italicum)***, İtüzümü ***(Solanum nigrum***), Düğünçiçeği ***(Ranunculus*** spp.) are very poisonous when fresh (in flowering). But if they are dried after flowering they do not show the same effect. Koca Fiğ (***Vicia freyniana)***, Kanyaş/ Kaynaşık/ Gelemge ayrığı (***Sorghum halepense),*** Çemen ***(Trifolium subterraneum*** and so on) are also effective when they are fresh in animals, while they are little effective or ineffective when dry. From these plants, ***Vicia freyniana*** is an endemic species of Lakes Region and is a fast growing species. It is an important plant that can be cultivated as a feed plant.

Feed plants: Kocafiğ (***Vicia freyniana*** (Endemic to the Lakes Region), other Fiğ (***Vicia*** spp.), Korunga ***Onobrychis*** spp.), Mısır/ Kacadarı (***Zea mays*),** Nohut (***Cicer arietinum***), Arpa (***Hordeum vulgare***), Çavdar (***Secale montanum***), Yulaf (***Avena fatua***), Buğday (***Triticum aestivum***). There are many meadows and pastures in the region. These areas are in Aksu, Sütçüler, Yenişarbademli, Senirkent, Uluborlu, Şarkikaraağaç, Yalvaç (Isparta); Ağlasun, Bucak, Düğer (Burdur). A large number of cattle are grazing in these areas. Cattle are usually sent to evening from morning, grazing. The animals come to the house or bar. Therefore, the region that feeds the bovine animals is a very important field. The products of these animals such as meat, milk, cheese, oil are very good quality. Small animals (sheep, goat etc.) are also grazing in wooded areas or forest openings, especially in the maquis areas. The products of these animals are equally valuable.

There are a number of plants that we used to know in the pasture: ***Onopordum, Cirsium, Picnomon acarna, Cnicus benedictus, Carduus, Cartjhamus*** species are the best examples. Pirnal oak ***(Quercus coccifera***) is still the most important fodder plant of goats.

Table 1. Important feed crops of the Lakes Region (*: culture form)

Taxa and Turkish names	Used Parts	Economic Priority
Vicia spp./ Fiğ	All over ground parts	Near Akseki and Isparta, the local people give the name "Fink". They are plants produced for feed
Onobrychis spp./ Korunga	All over ground parts	Some species are produced
Trifolium spp. /Üçgül	All over ground parts	It is also known as "scarlet". It grows naturally. It is fed to the animals.
Trigonella spp./ Çemenotu	All over ground parts	It grows naturally. It is fed to the animals.
Medicago spp. / Yonca	All over ground parts	It grows naturally. It is fed to the animals.
Secale montanum/ Çavdar	All over ground parts	Naturally grown and cultivated. It is fed to the animals.
Hordeum vulgare* /Arpa	All over ground parts	It is grown for food purposes. The other part is straw and used as bait after the harvest has been completed.
Triticum vulgare*/ Buğday	All over ground parts	It is grown for food purposes. After the barn has been harvested the other part is shredded, takes the name of straw and used.
Avena fatua/ Yulaf	All over ground parts	It is grown for food purposes. The other part is straw and used as bait
Beta vulgaris* /Şeker Pancarı	Tuber roots	After the sugar is obtained, the waste (bagasse) is packaged into commercial feed. It's the cheapest bait.
Zea mays*/ Silajlık Mısır	All over ground parts	Agriculture is done. It is grown for herb value. Then it is chopped into silage. Widely used.
Brassica rapa var***. rapa*** / Yem şalgamı	Whole plant	Agriculture is done.

3.3. Medicinal and aromatic plants of the region

Taurus nomadic herders and shepherds often used tar obtained from the dwarf Çam, Pine (***Pinus*** spp.), Ardıç, Juniper (***Juniperus*** spp.), Göknar/İledin, Fir (***Abies cilicica***) and Katran/Sedir, Cedar (***Cedrus libani***) trees when treating animals, are known. They use this tar against the Crimean Congo Hemorrhagic Disease and the "Tetanus Disease". The tar called "Black Physician" which we frequently encounter in animal treatment is used as "Yakı"[13] in the recovery of cold sores and injuries in low back pain. Recently for the purpose, Katran Soap has been produced and sought after with modern techniques.

Aromatherapy is a treatment method based on aromatic plants. Important medicinal and aromatic plants in the field are:
Ceviz (***Juglans regia***): They expressed the definite cures by using "Yakı" making and applying by blowing with water. Çam, Pine (***Pinus*** spp.): Chewing gum protects your dental health. Çıtırık/ Çedimek/ Menengiç (***Pistacia terebinthus***): It says that the defeat of the fruit protects the teeth. A food is prepared from the fruit with the name "Menengiç Kahvesi. The oil is very valuable in terms of medicine. It grows abundantly in the region naturally. Kadıntuzluğu/ Sarıçalı/ Karamuk (***Berberis vulgaris***): In the autumn, its roots are removed, cleaned and boiled. Gargling is done after the cold. It is expressed that toothache and wound in the mouth are good. Ebegümeci (***Malva sylvestris*** and ***M. neglecta***): If gas is produced as a result of cold and chilling cold. It is mixed with the barley flour and it is used as "**yakı**". The leaves and flowers are used in effective substance. It is used against coughing and as an emollient. Hatmi/ Gülhatmi/ Gülfatma (***Althea officinalis):*** Homeland is Eurasia. Especially the leaves are used. Effective substance is a trick. It is used against throat infections and inflammations. The tea of the flowers is drunk against infectious diseases. Drinking liquid extract obtained with water vapor is useful for lung diseases. Chest softener. ***Alcea*** genders are also used for the same purpose. The flowers are collected and shaded and dried. There are many kinds in the region and it naturally grows in abundance. Koyunotu/ Oğlanotu (***Teucrium polium***): It is boiled in a cold, waiting for 5-10 minutes, then 2 sips are drunk. It does not drink too much because it is painful. It grows abundantly in the region naturally. Suteresi/ Gölotu (***Nasturtium officinale***): Salad cancer patients are sick if the disease is fed. Recently, this plant has been largely forgotten. Even the number of those who now know the consumption side is very small. It seems that this drug was made against cancer in USA. Again in the United States, the algae of water algae (***Spirogyra*** etc.) are used against goitre disease. It is known that all plants living in the water are rich in iodine, diseases such as tonsillitis and goitre are also caused by iodine deficiency in the body, and a germicidal mixture is made with the name of tentide iodine by dissolving in iodine alcohol.

Papatya ***(Matricaria chamomilla):*** Homeland is Mediterranean Region. It is the flower of the plant used as medicine. ***Tripleurospermum*** and ***Anthemis*** species are also used for the same purpose. The species diversity in the region is excessive. Some are smelly. Acıyavşan/ Pelinotu (***Artemisia absinthium***): Homeland is Eurasia. Fresh branches and flowers of the plant are used. In the chemical composition absinthine is glucose. In addition, it has tannin, etheric oil etc. It is used against stomach discomfort (car retention, digestive disorders, etc.) and muscle weakness. ***A. campestris*** is known in the region as "Püren". Its branches are spread over fig, apricot etc. the fruits of the plants are dried. The name of a local area around Gölcük Lake is Pürenovası. Take the name from this plant. Civanperçemi/ Ayvedana (***Achillea millefolium***): Homeland is Europe. Branch leaves and flowers are used. A glycoside named Achillein is on its way. It is

used against indigestion and cancer. Plant sap is a powerful antiseptic. The water is used against the degradation of food. ***Achillea*** and ***Tanacetum*** species are very common in the region. It grows naturally. Meryemana dikeni/ Devedikeni (***Silybium marianum***): Can also be used for liver. In the morning they are boiled and drunk. It is recommended to drink local tea against many internal diseases. These plants are exported to Türkiye. Aspir (***Carthamus tinctorius***) plant is an old food additive plant that was started to be cultivated in Anatolia 3000 years ago [18]. In 2004 year, 582 thousand tons of aspirate were produced in 720 thousand hectares of field in the world. The cartharmin substance produced from aspir flowers is important as natural dye raw material and also used as a spice. Several species of ***Carthamus*** are naturally grown in the region. Oğulotu/ Melissa (***Melissa officinalis***): Homeland is the Mediterranean region. The Mediterranean region is mostly grown in Central and Southern Europe. It is the leaves of the plant used as medicine. There is aphrodisiac effective. The wild forms are grown in abundant amounts on the sides of the Sütçüler, Aksu, Yenişarbademli cities. Tıbbi Adaçayı (***Salvia officinalis***): Homeland is the Mediterranean region. It is produced for economic purposes in the region. Aromatic plants are usually sold to transmissions. Especially Sütçüler is exported to Europe. Kekik/ Zahter (***Thymus serphyllum***): Homeland is Eurasia. The plant that is used as medicine is branches, leaves and flowers. The active substance is thymol. It is used against coughing and stomach discomfort. In the region, it is cultivated. One source of healing is thyme (***Thymus, Origanum, Satureja*** and ***Thymbra*** spp.) and thyme oil. They are frequently used in both colds and tonsillitis. Oregano volatile oil is widely used both externally and externally in all infectious diseases in Taurus nomads. In Türkiye, such as ***Satureja, Thymus, Thymbra, Coridothymus*** and ***Origanum*** are also called thyme, and there are about 270 different species of plants used as thyme throughout the country. 70 of these species belong to the genus ***Thymus,*** 1 belong to the genus ***Coridothymus*** and some 10 belong to the genus ***Satureja.*** At least ¼ of these are grown or raised in the Lakes Region. Mercanköşk/ Kekik ***(Origanum*** spp.): The motherland is the Mediterranean region. There are about 20 species in the country. ***O. majorana*** in Akseki (Antalya) is known as "İncirkekiği". ***O. minutiflorum*** is known by the name of "Aşkekiği, Çorbakekiği, Yaylakekiği, Sütçüler kekiği, Totakekiği". ***O. onites***; It is known as "Eşekkekiği, Bilyalıkekik, İzmir kekiği". ***Origanum vulgare*** subsp. ***viride*** is known as "İstanbul kekiği". Leaves and fresh bodied foods are used as spices. For this reason, ***O. majorana*** is called "Figurine" in the vicinity of Akseki. ***Origanum*** species have been used as medicines and spices since ancient times. Exported products of Türkiye. Our best selling products. While dairy cows are the most preferred, there is no problem in the normal conditions of sale of all thyme to Europe. In recent times, cultural studies have accelerated. The most produced İzmir Kekiği, Donkey tyme in Turkish. The quality of the thyme produced is lower than the wild ones. Approximately 700 kilograms of thyme (rough weed) can be produced from a declination. It can be trimmed 3 times a year. Commercial value is 5 Tl / kg as roughage. ***Origanum*** species usually carry carvacrol and thymol as essential ingredients in essential oils. Essential oils obtained from ***Origanum*** species have some therapeutic effects, mainly coletogenic and antimicrobial effect. They can also be used in the pharmaceutical, cosmetic, perfume, liquor and soap industries. Kafaotu, Kafasüpürgesi, Karabaşotu, Dedegülçayı (***Cyclotrichum origanifolium***): It starts from Lake Region and spreads to Amanos Mountains (Adana, Hatay). While the top part is used as a spice, the oil is used for medical purposes (brain blood vessels, blood sugar lowering, blood pressure lowering etc.). It is a plant that is sold in abundance in Isparta. The fat content is 3-4%. There are 5 species of ***Cyclotrichum*** genus in Türkiye. ***C. niveum*** species grow abundantly in the steppe on the Malatya side and the oil content is 6% (very high) but the oil composition is not as good as ***C. origanifolium***. The head swab is called Head scavenging because it opens the brain vessels and increases the blood flow to help solve the problems in the brain. It is used more extensively for ***Lavandula stoechas.*** Cultivation ways must be sought. Its soap can also be used in the industry. Nane, Yarpuz ***(Mentha*** spp.): It is etheric / volatile oil which is called "menthol" which gives noxious taste and pleasant smell. These volatile oils are collected in secretory follicles and secretory glands on the epidermis covering the fresh body and leaves. Menthol is widely used in the pharmaceutical industry. It is exported products of Türkiye. Yarpuz/Filisgin, Mint (***Mentha piperita***): Homeland is Western Europe. The part used as medicine is the leaves of the plant. The active substance is the menthol. It is used in mouth water production and soothing. There are about 10 kinds in Isparta. ***M. pulegium*** carries 42-49 % mentol. In the region, it is cultivated. Approximately 10 wild forms grow in abundance on the sides of Sütçüler, Aksu, Yenişarbademli. Especially ***M. spicata*** and ***M. longifolia*** are very common. They are used in oil production. For ***Calamintha nepeta,*** the villagers of Aksu (Isparta) given the name "Hasnane" and volatile oil is removed. It is a precious oil. Lavanta, Lavender (***Lavandula stoechas, L. angustifolia, L. intermedia***): They have a separate importance for the Lakes Region. They have very good odor. The flowers are collected while they are about to open and distilled to obtain volatile oil. The flowers are a force transmitter and diuretic. Its tea is drink against rheumatism. Used externally as soothing. It is known that active ingredients in Lavantia suppress hepatitis B and C virus, which cause liver cancer. It is an

important plant group used in the perfumery industry. The flowers protect from drying clothes from insects. As an insect repellent, it can be used in place of naphthalene (asifinic), which is prohibited for its use as carcinogenic in recent years. The distillation of lavender herb with water vapor also changes the economic value of the essential oil, oily water or oil under water produced. Recently Kuyucak village (Keçiborlu) is going to introduce lavender fields and products with tourism. The flowers are a force transmitter, a diuretic. Drink tea against rheumatism.

There are 3 species (***Lavandula stoechas, L. angustifolia***), ***L. dentata*** and 1 hybrid (***L. x hybrida***) called lavandin and 20 cultivars (*Super A, Grasso, Grasso Tina, English, Akmeşe, Munstead, Duch, Abrial, Sevtapolis, Hemus, Ubileyna* etc.), members of the Lavender (***Lavandula***) genus are raised in the Mediterranean region only under the influence of Burdur Lake in the vicinity of Keçiborlu-Dinar, especially between Isparta-Burdur-Afyonkarahisar. The efforts to make a collection garden of all lavender varieties of Türkiye in MAREM (Isparta) have been going on for years.

Defne, Laurel (***Laurus nobilis***): The motherland is the Mediterranean region. In countries with Mediterranean coasts, abundance is found in and around the creek beds. By local people in Taurus mountains, it is called **Tehnel** or **Tehni**. The smell is hardly understood from the outside. Because etheric oil is an in-plant secretion. When the tissue is disintegrated, the odor will emerge. As a spice, in food it is very popular. It is an etheric oil and bitter substance that gives smell and taste. The leaves are especially preferred in fish dishes. The oil has very economically valuable. Especially, it is preferred in making soap for medical purposes.

Anason, Anise (***Pimpinella anisum***): Motherland is Asia. It has an etheric oil called anethol. This is also the substance that gives a burning flavor to the anise. Some cakes and alcoholic beverages is flavored with anise. It is also used in throat inflammations and stomach pain. Burdur province is produced in abundant quantities.

3.4. Isparta's important fragrant plant richness and vernacular names

There are aromatic plant varieties are 190 in Isparta province. Most of them can be cultivated in the region. The areas in which these crops are predominantly cultivated are Aksu, Sütçüler and Yenişarbademli districts which is rich in flora. From wild herbaceous plants; Kafaotu/ Karabaşotu/ Kafasüpürgesi/ Dedegül çayı (***Cyclotrichum origanifolium***), Sahlep (***Orchis, Ophrys, Dactylorrhiza*** spp.), Aşkekiği/ Yaylakekiği/ Bilyalı Kekik/ Eşekkekiği (***Origanum minutiflorum, O. onites***), Yarpuz/ Nane (***Mentha*** spp.), Evelik/ Kuzukulağı/ Labada (***Rumex*** spp.), Madımak, Çobandeğneği (***Polygonum*** spp.), Çöven/ Çevgen (***Gypsophia*** spp.), Karanfil (***Dianthus*** spp.), Koyunotu/Oğlanotu (***Teucrium polium***), Bodurmahmut (***Teucrium chamaedrys),*** Karakekik (***Tymbra spicata***), Adaçayı, Yaylaçayı, Dağçayı, İnceçay/Dallı (***Sideritis*** spp.), Şalba, Adaçayı (***Salvia officinalis, S. tomentosa***), Papatya (***Anthemis, Matricaria*** and ***Tripleurospermum*** spp.), Herdemtaze/ Altınotu/ Marsuvanotu (***Helichryssum*** spp.), Ebegümeci (***Malva sylvestris, M. neglecta***), Yavşan/ Pelin (***Artemisia absinthium***),) Nevruzotu/ Arslanağzı (***Linaria*** spp.), Nergiz (***Stenbergia lutea, Narcissus tazetta***), Çiğdem (***Crocus*** spp.), Zambak (***Lilium, Iris*** spp.), Meryemana dikeni/ Devedikeni (***Silybum marianum***), Dişotu/ Hıltan (***Ammi visnaga***), Öksürükotu (***Tussilago farfara***), Kardelen/ Nergiz (***Galanthus*** spp.), Kantaron/ Binbirdelikotu (***Hypericum*** spp.), Gülhatmi/ Gülfatma (***Alcea*** and ***Althea*** spp.), Ballıbaba (***Lamium*** spp.), Misk Adaçayı (***Salvia sclerae***), Gıvışkanotu (***Silene vulgaris***), Güneyik/Karakavruk (***Chondrilla juncea*** and ***Taraxacum*** spp.), Karahindiba (***Cichorium intybus)***, Sütlük (***Scariola*** and ***Sonchus*** spp.), Isırgan (***Urtica dioica***), Şakayık (***Paeonia mascula***), Kediotu (***Valeriana officinalis, V. dioscoridis***), Yoğurtotu (***Galium*** spp.), Dana ayağı (***Arum*** spp.), Melekotu (***Angelica sylvestris***), Tavşancılotu (***Heracleum*** spp.), yabani soğanlar (***Allium*** spp.), Sümbül (***Muscari bourgaei, M. muscarimi***), Ayrıkotu (***Agropyron repens***), Çakşırotu (***Prangos*** and ***Ferula*** spp.), Yaraotu (***Glaucosciadium cordifolium***), Böğürtlen (***Rubus*** spp.), Sakızotu (***Scorzonera*** and ***tragopogon*** spp.), Şevketibostan (***Cnicus benedictus***), Çördük/ Tarhanaotu (***Echinophora*** spp.) etc. are spread in the region.

From forest trees: Günlük/ Sığla (***Liquidambar orientalis***), Katran/ Sedir (***Cedrus libani***), Ardıç (***Juniperus excelsa, J. foetidissima, J. oxycedrus***), Çam (***Pinus brutia, P. nigra***) , İledin/ Göknar (***Abies cilicica***), Palamut Meşesi (***Quercus ithaburensis*** subsp. ***macrolepis***), Söğüt (***Salix*** spp.) etc. are spread in the region.

From the shrub group; Kebere/ Kapari (***Capparis spinosa, C. ovata***), Sumak/ Mavru (***Rhus coriaria***), Papazkülahı (***Eunymus latifolius***), Gelinyemişi/Erguvan (***Cercis siliquastrum),*** Ihlamur (***Tilia platypllos***), Karaçalı/ Çaltı (***Paliurus spina-christi***), Defne (***Laurus nobilis***), Sivrikekik, Et kekiği (***Satureja*** spp.), Karağan/ Laden (***Cistus*** spp.), Mersin/ Murt (***Myrtus communis***), Kuşburnu/ İtburnu (***Rosa dumalis, R. canina, R. hemisphaerica, R. micranrantha*** etc.), Püren, Funda (***Erica*** spp.), Tesbih Çalısı/ Ayıfındığı (***Styrax officinalis***), Üvez/ Tekeelması (***Sorbus*** spp.), Geyikelması (***Eriolobus trilobatus***), Hayıt (***Vitex agnus- castus***) etc. are spread in the region.

From herbal culture plants; Carnation, Clove, Opium, Garlic, Onion, Aspen, Cumin, Radish, Turnip, Dill, Cress, Rocket, Fennel, Broccoli, Cabbage, Mint, Thorn, Corn, Pumpkin, Cucumber and Melon. A science called "ethnobotanic" refers to how plants are used throughout human history, especially for therapeutic purposes. The use of plants for treatment is a common occurrence in non-industrial countries. According to the World Health Organization (**WHO**) estimate; 80% of people in some Asian and African countries are still treating with this type of plant.

Spice plants that benefit from the seed: Hardal, Mustard **(*Sinapis*** spp.): The motherland is the Mediterranean region. Mustard seeds have an etheric oil and a glycoside called sinigrin in this oil. There are two types: ***S. alba*** (Ak hardal in Turkish), ***Brassica nigra*** (Kara hardal in Turkish). Their seeds are not bitter and can be used in meals.

Some plants used as spices in Lakes Region: These plants are important for honey bees. It is aimed at increasing the yield of honey or against the disease of bee. The pines that eat the fresh body and leaves of the pine trees are called "basara in Turkish". The pine honey produced by eating these babies is also called " başara balı in Turkish ". Here are some local names of some bee plants: Basara çamı/ Kızılçam: ***Pinus brutia*****,** Kekik: ***Thymus*** spp., ***Satureja*** spp., ***Origanum*** spp., Gül: ***Rosa damascena*** and ***R. semperflorens,*** Geven: ***Astragalus*** spp., Lavanta: ***Lavandula stoechas, L. angustifolia*** and ***L. x hybrida*****.**

Important herbaceous aromatic plants cultivated in the region: Dereotu, Dill/ Anise (***Anethum graveolens)*****,** Kişniş, Coriander (***Coriandrum sativum)*****,** Anason, Anise (***Pimpinella anisum)*****,** Rezene, Fennel (***Foeniculum vulgare)*****,** Kimyon, Cummin (***Carum carvi)*****,** Turp, Radish (***Daucus carota)*****,** Çörekotu (***Nigella sativa)*****,** Canola (***Brassica napus),*** Haşgeş/ Haşhaş/ Afyon, Poppy ***(Papaver somniferum),*** Pamuk, Cotton ***(Gossypium hirsutum),*** Susam, Sesame ***(Sesamum indicum),*** Çöven ***(Gypsophila arrostii*** var. ***nebulosa)…***

From trees: Kestane/ Chestnut (***Castanea sativa),*** Kiraz, Cherry **(*Prunus avium),*** Elma, Apple **(*Malus sylvestris, M. domestica),*** Badem/ Padem/ Payam, Almond ***(Amygdalus communis),*** Ceviz, Walnut ***(Juglans regia),*** Ayva, Quince ***(Cydonia oblonga),*** Beşbıyık/ Muşmula, Medlar ***(Mespilus germanica).*** Ihlamur, Linden ***(Tilia*** spp.): The motherland is unknown. It is the flowers and bracts of the plant used as medicine. Effective items are aroma and etheric oil. The bracts has a gelatinous and scarious structure. It has diaphoretic and diuretic potency. Along the Aksu stream, there are its natural communities. In recent years, it is a tree species widely used in urban landscape. The economic value of flowers and woods are very high. The economic value of flowers is around 250 Tl / Kg. Mürver, Elderberry ***(Sambucus nigra***): Homeland is Asia. The part used as medicine is its fruits and flowers. The effective ingredients are amygdalin, a chelate, an etheric oil, a tannin and a glycoside. The plant has diuretic and sweating effects. In Yeni Mahalle, Gelincik, Yakaören villages and old house ruins of Isparta are grown as abundance. *S. ebulus* is also very common in the region. Its fruits are of medical value. Kediotu, Valerian (***Valeriana dioscoridis***): Homeland is Eurasia. Rhizomes and leaves of the plant are used. Its active ingredient is valerian acid and various etheric oils. In case of nervous weakness, it is used against hysteria and heart attack. It has aphrodisiac effective and sedating. The plant are used for eye diseases. ***V. officinalis*** is also used for the same purposes. However, it does not grow naturally in the region and it is provided from the transmissions. Ardıç, Juniper (***Juniperus foetidissima***): It is common in the Northern Hemisphere. Meat cones of it are used. The active substance is pinicrin glycosides and etheric oils. It's good for throat inflammation and indigestion. ***J. communis, J. excelsa, J. oxycedrus*** are used for the same purposes. ***J. excelsa*** and ***J. foetidissima*** logs are laid on the bottom of water wells to disinfect water. A bucket (water container) is made from the logs. Its woods are valuable. Primitive vegetation of the region is juniper forests. Lately, the soap made for medical purpose has been made widespread after the oil has been taken. Meyankökü, Liquorice ***(Glycyrrhiza glabra***): Homeland is Asia. The active ingredient is glycerin, asparagine, resin, sugar and glycyrrhizin. It is usually used in the production of cough medicines. The raw materials are exported. This plant grows on the side of Konya. It is raw material of collagen. The fibers are kept cold in water for 2 hours than drink. Zambak, Süsen, Lily (***Iris germanica***): Domestic culture plants grown for ornamental purposes in the entire country. In recent years, in Isparta is an industrial plant. Lily oil is a very rare, valuable cosmetic raw material for this reason. The oil is important for smell and health. The fragrance called pilgrimage is the lily essence. In perfumery sector, it is preferred for pleasant odor. Its oil is obtained like other volatile oils. That is, its oil is obtained by water vapor distillation of crushed rhizomes. The volatile oil can be in various tones of blue color. This depends on the type of distillation used and the method of distillation. The Robertet company (Keçiborlu) is the only company in the production and sale of this product. She sells her products to France.

3.5. Important industrial plant species and Turkish names are mentioned below:

Üçgül (***Trifolium*** spp.), Püren/ Funda (***Erica arborea***), Laden/ Karağan (***Cistus creticus, C. salviifolius***), Karaçalı/ Çaltı (***Paliurus spina-***

christi), Kekik/ Mercanköşk ***(Origanum onites, O. vulgare*** subsp. ***hirsutum),*** Şalba/ Adaçayı ***(Salvia tomentosa, S. argentea, S. aethiopis),*** Çam (***Pinus brutia, P. nigra, P. pinea***), Ihlamur (***Tilia argentea***), Ayçiçeği (***Helianthus annuus***), Kestane (***Castanea sativa***), Kocayemiş (***Arbutus unedo***, ***A. andrachne***) and Çöven ***(Gypsophila arrostii*** var. ***nebulosa)*** are very important plant species in beekeeping. Isparta has a chestnut stand at the age of 2000 in Ayazmana district. Most of these trees can be considered monumental trees.

3.6. Significant toxic medical plants in the region

The richest family on this subject is Solanaceae. Banotu (***Hyoscymus niger, H. reticulatus***): Homeland is Eurasia. It is a common species throughout the country. Leaves and seeds are used. Hypocrite, a poisonous alkolide, is an active ingredient. Used as a drug. Tatula/ Boru çiçeği/ Tatula, Pipe flower (***Datura stramonium***): It is a common species throughout the country. Its leaves and seeds are used as medicines. Effective materials of it are Atropine and Hyocyamin. It is used for asthma and cough. It is suitable for the production of alkaloids Atropine and Hyocyamine. ***D. inoxia*** naturally grows on the side of Keçiborlu and used fort he purpose. Yüksük otu, Thorny grass ***(Digitalis purpurea*)**: Homeland is Central Europe. Leaves are used. Inherent substance Digitalin alcohololide. It is specially grown for production. Eğreltiotu, Fern (***Aspidium filix-mas***): Used as a rhizome drug. It has Felix acid, floroglucin and tannin. It is used as a worm reducer. Ökseotu/ Çekem/ Burç, Mistletoe/ Zodiac (***Viscum album***): This species grows naturally in fruit and forest trees in abundance. Birds are used as food and medicine. It is fed to pets at certain intervals for pharmaceutical purposes. Growers in forest trees are used for lung cancer, and those who grow in fruit trees are used for stomach cancer.

3.7. Important ornamental plants

Şakayık / Ayıgülü (***Paeonia mascula***), Erguvan/ Gelin Yemişi (***Cercis siliquastrum***), Gül (***Rosa odorata***, ***R. canina, R. dumalis, R, alba, R. moschata, R. centifolia, R. banksiae, R. alpina*** etc.), Kekik (***Origanum*** spp.), Karağan, Çobançırası (***Phlomis grandiflora*** etc.), Papazkülahı (***Eunymus latifolius***), Akçaağaç/Şimşir (***Acer*** spp.), Mürver ***(Sambucus nigra*)**.

3.8. Fiber plants

Kendirotu/ Kenevir (***Cannabis sativa***), Pamuk/ Pambuk (***Gossypium hirsutum***), Keten (***Linum usitassimum***).

4. Discussion and Conclusion

At the end of the paper, the relationship between flora, vegetation, climate and culture of it was emphasized. A list of the important plants produced for industrial purposes are given in different areas of the region; suggestions for the development of agriculture have been made. It is seen that the floristic structure is very important especially in medicinal and aromatic plants in local agriculture. It was understood that the elements of wild flora were a sign of the well-developed breed and the families that had to be produced in the local agriculture. It was explained that the success of the strawberry creations in Şarkikaraağaç city is the success from Kızıldağ flora and the success in the production of sugar beans is one (Fabaceae/Leguminosae) of the first 3 families of natural flora pulses. The success in the production of oil rose is coming from the Dedegül mountain which is the gene center of rose genus. Dedegül Mountain, which is seen as the most important biodiversity center in the Lakes Region, was added to Kızıldağ National Park in 2018 and it was taken under protection [25].

Turks did not want to leave the experience of nomadism throughout history. Despite the fact that this style of life has weakened in recent years, it is still not abandoned. This experience is not an obligation, it is a choice. Therefore, local people who live especially in rural areas know wild plants more closely than our resident adaptable people and know better to use them. Over time, they begin to cultivate the most beneficial crops, and so the plants are cultured and traded. Local people who are in harmony with established life are more familiar with wild plants and skilled in hand because they can easily reach to modern hospitals and pharmacies. Because the obligation in the cities is not inhabited, there is not much need for folk medicine. The place of folk medicine leave for modern medicine.

People in Keçiborlu and its surrounding produce rose, lavender and lily. The industrial facilities related to the topic of the field where the other fragrant plants such as thyme, sage, juniper etc. are also processed are intensified. It will be a correct name to say "**Itır Valley/ Fragrance Valley**" to this area and it will be an effective slogan in tourism. Local authorities are expected to consider this proposal. The Provincial Directorate of Agriculture is also advised to evaluate the Keçiborlu area for scented plants.

Lakes Region's industrial scented plants: According to the order of importance; rose, lavender, lily, cappari, thyme, yakbin, juniper etc. It is based on rose production based to ***R. damascena.*** Essential oil is obtained from these scented flowers. The economic value is about 8500 Euro / kg.

It is under the influence of a microclimate formed by the influence of Burdur Lake in the central state of the aromatic plants such as Keçiborlu (Gülköy, Kılıç, Senir, Ardıçlı, Kuyucak, Saracık villages) and

Güneykent (Gönen) and Burdur center villagers (İnar, İlyas, Karakent, Kavak, Başmakçı etc.). It is imperative to understand and protect the ecological significance of Burdur Lake in order to sustain the cultivation of aromatic plants in the region. There are important initiatives in the villages near Burdur Lake. They are both skilled in producing different agricultural plants and producing agricultural products. For example, in the village of İlyas (Burdur) vinegar varieties have been made since ancient times. The village is the most experienced field in vinegar production of the region. Burdur Dimrit of vinegars is local variety to Burdur lake. At the same time, settlement centers around Lake Burdur are the center of production and processing of medical aromatic plants. In the light of these endings, the suggestions for the development of agriculture in the region are as follows:

Organizations related to fragrant plants should be strengthened. Exchange of volatile oil plants should be established. Action plans should be prepared in line with the objectives of improving the sector's development and regional cooperation by evaluating the existing potential of the city; working groups and committees should be established to pass these plans to life.

In the vicinity of Keçiborlu-Dinar, agriculture-based industry should be encouraged. In fact, large industrial enterprises should be replaced by family/ peasant type enterprises, factories should also undertake marketing of oil produced by small enterprises as well as production. Solid-fuel, portable, easily portable distillation equipment (boilers) are needed for villagers, families and small businesses.

Most of the fruit trees are of Mediterranean origin. At least half of the fruit trees in Türkiye are for the Rosaceae family. Mediterranean region is gene centers of medicinal and aromatic plants. Why is an extract and package factories established in a region that is the gene center of Umbelliferae (Kerevizgiller), Lamiaceae (Ballıbabagiller) and Rosaceae (Gülgiller), the question is still unanswered.

Most exported plants of Türkiye; thyme, laurel, cumin and mint. In import, it is cumin, cloves and ginger. Türkiye is 18th among the 110 exporters countries. And 5th among European countries. While Türkiye has export potential of 200 medicinal plant species, it can sell 70-100 species. Sütçüler thyme is the finest thyme species in the world. There is no sales problem.

Oregano production in Turkey is the most in Denizli. In addition to ***Iris germanica*** species, ***Lilium*** type may be more profitable if produced. ***Lilium candidum*** is a value that is more effective volatile oil than the current zambia.

It is a late work selection process in all fragrant industrial plants, especially rose, lavender and lily varieties. The types that are efficient and compatible with the Isparta ecological conditions should be identified, registered and agricultural production should be spread over those types. This is a result that can be achieved in collaboration with Industry-University. In addition to the essential oil, the production of oiled plant waters should also be emphasized. Especially this process falls into small businesses. The inadequacy of quality rose water production in Isparta is sad. In order to increase processing time, drying and storage of raw material should be sought. In Süleyman Demirel University, there is a need for an accredited laboratory that can analysis volatile oils and standardize volatile oils. In this way, the needs of the sector will be covered in Isparta.

The economic value of the Sahlep group is very high. The gathering is also excessive in this measure. These crops must also be protected. The plans and projects should be carried out for the economic purposes of each taxon and for the continuity of the generations after the studies for determining the distribution areas are made.

The production of some mushrooms from the nature has increased considerably in the region. In the end, the region became a mushroom production center. Drying facilities were established. However, it was not possible to reach the expected sales. While mushroom production and processing are becoming widespread in the region, ways to sell and make medicines should be sought.

Important industrial plants from medical point of view: Afyon/Haşhaş, Opium / Poppy ***(Papaver somniferum),*** Karabaş otu/ Lavanta, Lavander (***Lavandula*** spp.), Isparta gülü, Isparta rose (***Rosa damascena***), Kuşburnu, Rosehips (***Rosa alba, R. dumalis, R. canina, R. beggeriana*** vs.), Ökseotu/ Burç, Mistletoe (***Viscum album***), Acıyavşan/ Pelinotu, Bitterworm (***Artemisia absinthium***), Mürver, Elder-berry ***(Sambucus nigra*)**, Yüksük otu, Thimble ***(Digitalis purpurea*)**, Meryemana dikeni/Devedikeni, Thistle (***Silybium marianum***), Civan perçemi/ Ayvedana (***Achillea millefolium*** etc.), Kantaron/ Binbirdelikotu (***Hypericum*** spp.), Tatula / Boru çiçeği ***(Datura stramonium***, ***D. inoxia),*** Papatya, Daisy ***(Matricaria chamomilla***), Kırlangıçotu (***Chelidonium majus***), Eğirkökü (***Acorus calamus***), Gölsoğanı (***Leucojum aestivum***), Şekerotu (***Stevia*** spp.).

There are very different habitats in Lakes region. The plant groups of each habitat indicate that the cultivation of the cultivated plants from the same group in the relevant area will be appropriate. In front of the Fabaceae family around Isparta, Sultan Mountains, Köprülü Kanyon, indicates the suitability of the ecological environment for growing legumes. The first place around Lake Beyşehir shows the most

suitable growing area for Legumes like sugar bean. The presence of the Caryophyllaceae family and the genus ***Silene*** in the vicinity of Lake Gölcük (Isparta) indicates that the production of carnations in the village of Deregümü village (Isparta) will be successful. The arrival of the Rosaceae family in the Kızıldağ (in Şarkikaraağaç-Aksu) indicates that the production of strawberries will be successful. Samples can be duplicated. At the same time, the natural flora provides vital plant material for agriculture to the region. The richness of local flora in terms of economic plants has made the region an important agricultural center. The success of rose cultivation is explained by the fact that the gene center is the Dedegül mountain. This wealth is reflected in technology over time. In Burdur and Isparta, important agricultural machines are produced.

Medical aromatic plants are predominant in the region. In this respect, the richness of natural resources is more prevalent in the traditional life style of local people. Flora and vegetation are important factors in the development of a region. Plants produced in agriculture can be obtained from natural flora. The raw materials for agricultural production can also be made from wild plants grown in natural areas. The diversity and abundance in the natural flora gives an important indication of which plants can be produced easily in the cultivation of the region.

A rose museum in the region is unfortunately not established and its establishment is not on the agenda. Botanical Garden of Süleyman Demirel University is a very important opportunity for especially Isparta and Lakes region. The region regards this place as a promenade and a political polemic tool. We must increase our contributions to the region and country's economies by completing our missing directions and evaluating our Isparta province according to competitive conditions. We should also go to the rose sapling production and the fruit rose. We must capture modern technology in the process of roses. Fragrant plants for industrial purposes, especially oil roses, should be evaluated in the context of industrial plants. Oil rose is still in support of ornamental plant status. The rose farmer is hurting himself. Producer certified seedlings / seedlings should be given. In this way, production is standardized and brand value is increased. The sale of oil rose should be prohibited except for for oil rose farming. The varieties should be determined according to the purpose and ecological environment, and the value of rose flowers should be appreciated according to the variety and production technique (such as organic agriculture). This information will be updated as new researches are carried out in the region. As the agricultural industry develops, the raw material that is needed will change the production pattern of the plants. Production of more plants will be done. This article is a first in this issue and the next studies should be based on the association of a particular group of plants with the local flora and economy rather than general knowledge [25].

Fauna is also rich where plants are very much. Plant and animal richness encourage each other. Dedegül mountain may be the richest area in terms of fauna. It is pleasing that this mountain is protected under Kızıldağ National Park. It is very difficult to identify the richest areas because the Fauna studies cannot be carried out as a whole. Only in terms of insects, in terms of birds, we can use an expression that is rich in mammals or butterfly. It is very difficult to reveal all fauna. On the other hand, the fact that the study area is rich in wetlands has been an important factor in the richness of water birds. The number and diversity of the birds were very effective in the species such as mistletoe (***Viscum album***), rosehip species (***Rosa*** spp.), ***Sedum*** and ***Sempervivum.*** Similarly, the variety of insect species increased the wealth of the species of Orchidaceae family. Biodiversity is more suitable for agriculture, so the agriculture-based industry will be more successful.

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