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## **SUSTAINABILITY OF HEALING AND FRAGRANCE: ESSENTIAL OIL INDUSTRY REVIEW**

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### **Abstract**

*These days when the world's resources are in danger, the resources of many products are slowly being depleted. Essential oils and medicinal aromatic plants are also among the products whose resource is depleted. This study aims to analyze the statements, studies, and awareness of companies that trade in the field of essential oils on sustainability. For this purpose, medicinal aromatic plants whose sources are in danger and companies operating in this field have been determined. Then, the sustainability statements of these companies were analyzed and their studies on this subject were examined. When researching endangered oils reveals that some plants such as sandalwood, frankincense, myrrh, and rosewood have emerged because they were collected from limited sources in regions of the world suffering from severe drought conditions. During the company analysis, titles such as responsible production, organic agriculture, certification, environmentally-friendly transportation and packaging, and the importance given to animal rights were taken as a basis. The awareness of companies in these areas was examined. As a result of the evaluation of the information found, it has been seen that the companies do not have many statements about sustainability in general. In addition, it has been determined that there is not much difference between exporting and non-exporting firms.<sup>1</sup>*

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*Keywords: Sustainability, Essential Oils, Medical Aromatic Plants, Export.*

## ŞIFANIN VE KOKUNUN SÜRDÜRÜLEBİLİRLİĞİ: ESANSİYEL YAĞ SEKTÖRÜ İNCELEMESİ

### Öz

Dünya kaynaklarının önemli derecede tehlikede olduğu ve sürdürülebilirlik kaygısının giderek arttığı bu günlerde, yavaş yavaş pek çok ürünün tükenmesi olasılığı ile karşı karşıyayız. Esansiyel yağlar ve tıbbi aromatik bitkiler de kaynağı tükenen ürünler arasında yer almakta. Bu çalışmanın amacı esansiyel yağlar alanında faaliyet gösteren firmaların sürdürülebilirlik alanındaki beyanları, çalışmaları ve farkındalığını analiz etmektir. Ayrıca bu amaçla kaynakları tehlikede olan tıbbi aromatik bitkiler ve bu alanda faaliyet gösteren firmalar tespit edilmiştir. Ardından bu firmalar ve esansiyel yağ ihracatı yapan markaların sürdürülebilirlik beyanlarını incelemek ve haber analizi yapmak yoluyla sürdürülebilirlik konusundaki farkındalıkları, tutumları ve faaliyetleri ortaya koyulmuştur. Firma analizleri sırasında sorumlu üretim, organik tarım, sertifikasyon, atık yönetimi, çevre dostu nakliye ve paketlenme, hayvan haklarına verilen önem gibi başlıklar esas alınmıştır. Firmaların bu alanlardaki farkındalığı incelenmiştir. Bulunan bilgilerin değerlendirilmesi neticesinde, genel olarak firmaların sürdürülebilirlik konusunda fazla beyanlarının olmadığı görülmüştür. Sürdürülebilirlik alanındaki beyanların incelenmesinin ardından, ihracat yapan ve yapmayan şirketler özelinde karşılaştırmalar yapılmıştır. İnceleme sonucunda ihracat yapan ve ihracat yapmayan firmalar arasında sürdürülebilirliğe dair farkındalığa sahip olunması ve beyan yapılması konusunda çok fazla fark olmadığı belirlenmiştir. Elde edilen bulgular ışığında; ülkemiz ihracatında önemli paya sahip ve sürdürülebilirlik tehdidi ile karşı karşıya olan esansiyel yağların üretici ve satıcılarına yönelik daha fazla bilgilendirme yapılması ve de farkındalık oluşması için bu çabaların sürekli ve geniş bir kesimi kapsayıcı şekilde olması gerektiği tespit edilmiştir. Tarım Bakanlığı yönetiminde ülkemizde yürütülecek çalışmalar çok büyük ilerleme yaratacaktır.

**Anahtar Kelimeler:** Sürdürülebilirlik, Esansiyel Yağlar, Tıbbi ve Aromatik Bitkiler, İhracat.

### INTRODUCTION

The use of medicinal aromatic plants dates back to ancient times. These medicinal plants have been used by humans for therapeutic and other purposes. In addition, essential oils obtained from these medicinal plants have been used with the physical and emotional treatment method called aromatherapy. According to the World Health Organization data, approximately 20,000 plants are used for medicinal purposes (Temel et. al., 2018, p. 199). With its geographical structure and rich flora, there are 3 thousand 649 endemic plant species in Turkey and approximately 1000 of these plants are used for medicinal and aromatic purposes in Turkey and around the world (Keskin, 2022). Herbal products have few side effects unlike synthetic drugs. These products are safe and healthy for consumers. This situation increases the market share of the sector (Temel et. al., 2018, p. 199).

In addition, Turkey is among the most important countries in the world in the trade of medicinal plants and essential oils. When we look at the plants that our country is superior in production and export; thyme, laurel, poppy, and anise are seen (Hasdemir, 2021, p. 39). Additionally, oil rose, thyme, lavender, anise, fennel, and sage are important species used in essential oil production in our country (Hasdemir, 2021, p. 39). An increase over the years in thyme, lavender, and sage used in essential oil production is seen (Hasdemir, 2021, p. 39).

In recent years, especially after the Covid 19 pandemic, the interest and demand for natural products are increasing. Therefore, rather than chemical drugs natural and herbal products use is preferred. Interest in medicinal aromatic plants and essential oils is on the rise in national and international markets. When the world essential oil sector market is examined, the total export figure is 5,8 billion dollars. The export figure of Turkey to the whole world is 3,7 million dollars in 2021 (TradeMap, 2022). The main exporters countries in the essential oil market are; India, the United States of America, France, China, Brazil, Indonesia, Germany, Netherlands, the United Kingdom, Spain, and Italy. Turkey ranks 25th in essential oil exports on the world market (TradeMap, 2022).

While medicinal aromatic plants and the oils obtained from these plants are so valuable, unfortunately most of them are endangered. According to the report of the International Union for Conservation of Nature (IUCN), human-induced abuses the result shows that 784 species have completely disappeared from the world (Hasdemir, 2021, p. 30). In the last century, the world has lost 30,000 plant species (Nohutçu, et al., 2019, p. 147). As a result of the excessive use of natural resources, the diversity of many is in danger of extinction. In addition to these, population growth, unplanned urbanization, forest fires pose a danger to biodiversity. At this point, all players operating in the essential oil sector must comply with the sustainability principles from the growing process of the plants to the packaging.

In this article, the issue of sustainability is examined and analyzed on a company basis for the essential oil sector. First of all, market information, exporter and importer countries, export and import numbers in the sector are examined. Then, Turkey's position in the market is mentioned. A research is conducted on the top 25 international and 28 Turkish companies in the essential oil sector. From the website analysis of the top essential oil companies, which products they work on, their awareness, attitudes and activities about sustainability were compared.

## **LITERATURE REVIEW**

### **Sustainability of Medical and Aromatic Plants**

Until recently, the business model literature hardly touched on social and environmental challenges. Instead of social and environmental sustainability issues, the focus was on the sustainability of companies in the market. Firms' activities on sustainable business models and sustainable development were weak. (Pedersen, et. al., 2018). Recently, however, there has been a growing interest in integrating corporate sustainability into traditional business model thinking (Schaltegger, et. al., 2016). Additionally, the business model perspective is important in the context of sustainability as it highlights an organization's logic of creating value.

Sustainability literally means ensuring the continuity of diversity and productivity. Also, defined as meeting the economic and social needs of our time without causing negative effects on the ecosystem and without harming the possibilities of future generations (Yavuz, 2010, p. 64). In other words, it can also be defined as maintaining the ability to be permanent. Recently, sustainability practices have guided companies seeking an interaction between economic, ecological and social needs (Milanesi, et. al., 2022, p. 101). The has pointed out the development of companies that propose sustainability as the main core value of their offer (Pedersen, et. al., 2018). Sustainability has 3 basic components; environmental protection, economic growth and social development (Varlı, et. al., 2020, p. 27).

Essential oils are obtained by steam distillation of various parts of the plant. Most plant essential oils are considered safe and have been directly used as additives in the food, health care and medical industry (Zhang, et. al., 2021, p. 2). Based on the essential oil sector, there are serious risk factors in the sources of medicinal aromatic plants. Due to the unconscious activities of humans, some plant species endangered and some extinct. Factors that endanger of plants are, excessive and unconscious collection, narrowing of growing areas, environmental pollution factors, global warming, overgrazing, tourism, industrialization and urbanization, pollution, destruction of forest and fires (Nohutçu, et. al., 2019, p. 147).

The *unsustainable harvesting practices* of medicinal and aromatic plants are the cause of concerns for the countries across the world, especially with respect to the sustainability and management of bio-resources (Sharma & Kala, 2022, p. 1). Additionally, as a result of the expansion of marketing infrastructure and rising demand of medical and aromatic plants, the harvesting increases resulting in overexploitation. The continued overuse and unsustainable harvesting of medicinal and aromatic plants can result in reduced survival rates or even extinction of their natural populations.

According to the data of the International Union for Conservation of Nature (IUCN), approximately 15,000 medicinal plant species are in danger of

extinction in the world. It is estimated that up to 13% of the total flora in the world is disappearing day by day (Nohutçu, et. al., 2019, p. 146). In addition, the IUCN examined the distribution of endangered plants by country. Turkey ranks 4th after the United States, Australia, and South Africa. Also, it is stated that close to 150 plant species in Central Europe are endangered as a result of intensive gathering (Hasdemir, 2021, p. 30). For this reason, sustainability measures should be a priority when collecting plants from nature all over the world.

In the sustainable production of medicinal and aromatic plants, the natural environment, healthy societies, and economic vitality complement each other factors. There are very few studies on how to harvest medicinal plants and how sustainable harvesting should be in Turkey. As a result of this situation, natural herbal resources are consumed unconsciously. To prevent this situation, regular and controlled collection, export quota, measures to minimize post-harvest losses, administrative and legal regulations, and training studies should be carried out.

The generations of partridge's eye, temple tree, and devil's claw plants, which are collected in high demand around the world, are also endangered. In Turkey, it is known that orchid species used as salep, gypsum, and gentian plants are in danger as a result of over-collection (Nohutçu, et. al., 2019, p. 147).

Organic agriculture, which is highly demanded by consumers and is the best agricultural practice, is a method with high development potential. Some important products produced within the scope of organic agriculture are listed as follows: thyme, rose, fennel, sage, laurel, lavender, and linden (Hasdemir, 2021, p. 33). This agricultural practice is mainly applied in the Aegean and Mediterranean regions of Turkey.

Sustainability practices not only help the environment, but also provide a *better brand image, lower cost, and higher efficiency* for companies, and these advantages bring export companies to the fore in an environment of global competition.

The WHO published a report about traditional medicine Strategy 2014-2023. In report they mentioned that an increased number of countries are acknowledging the role of traditional medicine in their national health systems, and an increasing number of member states had developed national policies on traditional medicine, launching national laws or regulations and implementing regulations on herbal medicines (WTO, 2013). The report also mentioned that the attention to traditional medicine from many countries will increase even more.

## **MATERIALS AND METHODOLGY**

In this paper, secondary research method, which is a is qualitative research method, was used. Existing data were collected from companies' websites, statements and reports. During the company analysis, titles such as responsible production, organic agriculture, certification, waste management, environmentally friendly transportation and packaging, and the importance given to animal rights were taken as basis. The awareness, statements and studies of the companies in these areas were examined. TradeMap data of the International Trade (ITC) center, industry policy documents, academic review articles, journals and reports were used as research material. Tables were created as a result of the analysis of the foreign trade data. Data are expressed in USD. Companies in this sector are analyzed. Examining the websites of these companies, their statements about sustainability, their awareness and work are examined.

### **Market Analysis of Essential Oils and Medical Plants**

The interest and demand for medicinal and aromatic plants increase every year in the world and Turkey. Increasing consumer awareness of natural and organic personal care products has forced manufacturers to shift their focus from synthetic to natural products, acting as one of the major forces influencing the global essential oil market (Jandhyala, et.al., 2020). Especially after Covid 19, many people have sought alternative healing. With the various health benefits of essential oils in aromatherapy and medical applications, the demand for products are increasing considerably. In direct proportion to the increasing demand, many plant species are still collected from nature and traded in the domestic and foreign markets. These consumed plants are excessive and unconscious collection, making sustainable use of plants difficult.

Europe, the largest essential oil producer, is expected to host various end-use industries in the future. It is expected to accelerate the production of essential oil in the region with the effect of positive government regulations and other works related to organic farming. According to analysis, total export value of essential oil sector has reached to 5,8 million dollars in the world. The export figure of Turkey to the whole world is 3,7 million dollars in 2021 (TradeMap, 2022). The main exporters countries in the essential oil market are; India, the United States of America, France, China, Brazil, Indonesia, Germany, Netherlands, the United Kingdom, Spain, and Italy. Turkey ranks 25th in essential oil exports on the world market (*See Table 1*).

**Table 1:** List of Exporters for Essential Oil (HS Code 3301)

Unit: US Dollar thousand

Exporters	Exported value in 2019	Exported value in 2020	Exported value in 2021
World	5635565	5314481	<b>5,848,354</b>
1. India	1212564	837765	975816
2. United States of America	788842	803523	865794
3. France	460229	478641	503319
4. China	349876	305141	349322
5. Brazil	313938	270190	279001
6. Indonesia	185328	215807	248411
7. Germany	202358	209834	237713
8. Netherlands	90418	156837	216467
9. United Kingdom	210808	205290	196511
10. Spain	174357	187271	180985
11. Italy	182862	160917	177538
12. Argentina	205349	194738	154282
13. Mexico	112937	108019	127317
14. Bulgaria	86950	96046	101552
15. Australia	63872	82575	89159
16. Madagascar	60106	69811	76975
17. Canada	56778	61086	73112
18. Switzerland	67120	66998	68033
19. Austria	39350	41094	60728
20. Egypt	51936	59894	56374
21. Sri Lanka	35348	45629	56054
22. Singapore	66470	54250	52864
23. South Africa	44789	50962	52321
24. Ireland	20725	17881	39265
<b>25. Turkey</b>	<b>40065</b>	<b>37894</b>	<b>37,917</b>

Source: TradeMap, 2022

Considering Turkey's imports in the essential oil markets, in 2021 Turkey exported 25,7 million USD to the whole world (*See Table 2*). When we look at the countries to which Turkey exports in the market, we see countries such as France, the USA, England, and Germany. As we mentioned earlier, most of these countries are in a strong position in the essential oil market.

**Table 2:** List of First 10 Importing Markets for a Essential Oils Exported by Turkey (HS Code 320129)

Unit: US Dollar thousand

Importer Countries	Exported value in 2019	Exported value in 2020	Exported value in 2021
World	30571	26583	<b>25,788</b>
1. France	14190	8602	12503
2. United States of America	2420	7591	3342
3. United Kingdom	3830	1677	2062
4. Germany	2864	933	1354
5. Hungary	496	848	1229
6. Switzerland	1440	1476	909
7. Spain	569	776	687
8. Ireland	0	0	365
9. Belgium	249	342	357
10. Netherlands	96	20	356

Source: TradeMap, 2022

The most exported essential oils in the world are listed as lavender oil, rosemary oil, bergamot oil, mint oil, eucalyptus oil, frankincense oil, cedarwood oil, tea tree oil, patchouli oil, and jasmine oil. Thyme is a plant species that has many uses, especially in the spice, medicine, cosmetics, and chemical industry. Thanks to alternative medicine applications, the demand for thyme has increased with the increase in its use in recent years and has become a product of increasing economic value. Turkey is the country that produces the most thyme in the world. In addition, it is one of the world's largest laurel exporting countries and one of the world's largest poppy producing and exporting countries. Turkey also has superiority in anise, cumin, coriander, and black cumin (Keskin, 2022).

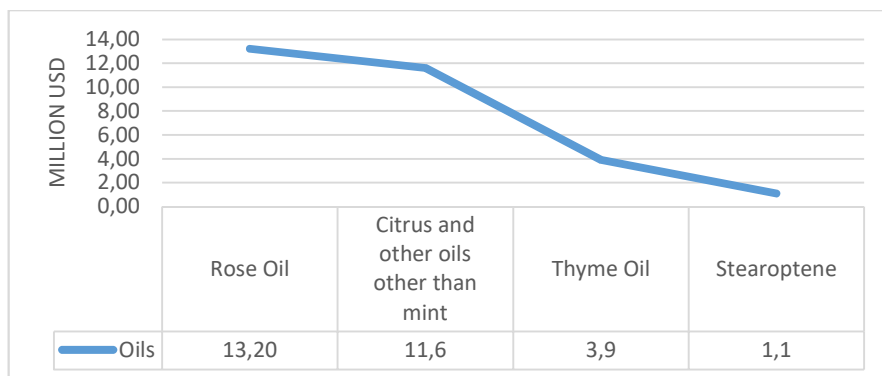
Oil rose, thyme, lavender, anise, fennel, and sage are important species used in essential oil production in Turkey. An increase over the years in thyme, lavender, and clary used in essential oil production is seen. Especially in recent years, Anatolian Clary and lavender cultivation have gained momentum (Hasdemir, 2021, p. 29).

The main product group of essential oils in Turkey has an export value of 49 million USD. 13.2 million of this from rose oil, 11,6 million from citrus and non-mint oil concentrate, 1,1 million from stearoptene, and 3,9 million from thyme oil (Hasdemir, 2021, p. 39) (*See Graph1*). Thyme oil is exported to the USA and Switzerland. Also, Turkey has a high potential for rose production. The essential oils obtained from roses are mostly exported to France, Hong Kong, and China and



the highest export value is gained from trade relations with France, England, and Switzerland. At this point, exporting rose oil instead of raw material sales creates added value. As a result, export revenue will increase significantly.

**Graph 1: Turkey Essential Oil Export Numbers**



Source: Hasdemir, M. (2021). *Tıbbi ve Aromatik Bitkiler Sektör Politika Belgesi*, 2021, p. 39

Turkey exports to most strong countries in the sector and Turkey is one of the most important countries in the trade of medicinal and aromatic plants. However, Turkey could not reach the desired level despite its high potential (Varlı, et. al., 2020, p. 26). In fact, our country, which is very productive in the production of medicinal and aromatic plants thanks to its geographical location, natural habitat and flora, can be strengthened in the market with some improvements.

Research and studies should be carried out to create value-added products from this plants, which has quality raw materials. Sustainable production of medicinal and aromatic plants should be ensured. In this process, the natural environment, healthy societies and economic vitality complement each other are factors. Sowing techniques should be determined and it should be grown in regions that comply with ecological rules (Varlı, et. al., 2020, p. 26).

## FINDINGS

When the main companies in the essential oil sector in Turkey are examined, there are 28 companies that sell in pharmacies. Beside this, there are 25 internationally popular companies in the essential oil industry.

### International Company Review in Essential Oil Industry

After examining 25 companies operating in the essential oil sector, it is seen that they sell diffuser, hair, body and face care products, supplements and other aromatherapy products in addition to essential oils. Only 3 companies have other language options. 4 companies have a sustainability tab on their website. These

companies are: L'Occitane, Mountain Rose Herbs, Now Essential Oils, and Rock Mountain Oils (See Table 3).

L'Occitane Group aims to limit its environmental impact at every stage of production, from formulation through to distribution in-store. Additionally, they have a partnership with the International Union for Conservation of Nature. They focus on identifying the impact of their activities on biodiversity and implementing an action plan. They also support several local projects aimed at preserving the natural Mediterranean heritage and ensuring that plant harvests are suitable for sustainable harvesting to protect the natural environment (Group L'Occitane, Commitments: Sustainability, n.d.).

One of the most important points about the sustainability of medicinal plants is sustainable sourcing. At this point, it can be said that the company exhibited a successful policy. They are committed to developing long-term relationships with our producers and prioritize short, local integrated channels when sourcing our core content. They claim that they are very involved in their products from the raw to the final products.

Under the heading Environmental Sustainability, Rock Mountain Oils has stated that they are in the process of switching to shipping packaging made from 100% recycled material. Besides, Now Essential Oils is committed to responsible management by reducing its carbon footprint and sustainability initiatives such as sustainable ingredient sourcing, eco-friendly packaging, green facilities, and eco-partnerships and certifications (Rock Mountain Oils: Environmental Sustainability, n.d.).

Besides these companies Aethos, Aura Cacia, Aveda, doTERRA, Eden's Garden, Helias and Jurlique mentioned sustainability on their website (Aethos, (n.d.); Aura Cacia: Who we are, (n.d.); Aveda: Our Story (n.d.); Doterra Essential Oils:Our Story, (2019); Eden's Garden:Our Story, (n.d.) Helias Oils. (n.d.); Jurlique Skin Care:Our Story, (n.d.). Aveda company mentioned *responsible packaging and production* and *environmentally friendly, renewable energy sources* (Aveda: Our Story, n.d.). Additionally, there are recent efforts to minimize packaging and maximize our use of recyclable and post-consumer recycled materials. Aethos, Eden's Garden, Jurlique, and Aura Cacia have attached importance to ethical, sustainable sourcing, and production. They touched upon the issues of sustainable farming, the sustainable harvest. These are important factors in ensuring the sustainability of plants. Of course, the right packaging and the benefit of using renewable resources are also very important. But without the correct production, harvesting, and cultivation of raw materials, the endangerment of plants cannot be controlled. Besides these, most companies have declared that they are chemical-free and not tested on animals. It is a fact that consumers have become conscious and their purchasing behavior has changed recently. They pay attention to these factors when purchasing a product.

**Table 3:** International Company Review

COMPANY NAME	ESTABLISHMENT DATE	ARE THERE SUSTAINABILITY TABS ON THE COMPANY'S WEBSITE?	DOES THE COMPANY EXPLANATIONS ON SUSTAINABILITY?	WHICH PRODUCTS ARE THEY WORKING ON?
<b>Aethos</b>	-	NO	YES	Essential Oils
<b>Aromatherapy Associates</b>	1985	NO	NO	Oil Blends, Shower Oils, Essential Oils, Skin Care Products
<b>Artnaturals</b>	2016	NO	NO	Aromatherapy Products, Skin Care Products, Hair Care Products, Bath And Body Products
<b>Aura Cacia</b>	1982	NO	YES	Essential Oils, Skin Care Products, Bath Products, Diffusers and Accessories
<b>Aveda</b>	1978	NO	YES	Hair Care Products, Skin Care Products, Essential Oils, Makeup, Body Care Products
<b>Cap Beauty</b>	2010	NO	NO	Skin Care Products, Makeup, Hair Products, Body and Bath Products
<b>de Mamiel</b>	-	NO	NO	Skincare, Bodycare and Aromachology Products
<b>doTERRA</b>	2008	NO	YES	Essential Oils, Personal Care, Supplements, Diffusers and Accessories
<b>Eden's Garden</b>	2009	NO	YES	Essential Oils, Essential Oil Sets, Bath, Body, Home Products and Diffusers
<b>ELLIA</b>	-	NO	NO	Essential Oils, Diffusers, Skin Care Products
<b>H. Gillerman Organics</b>	2008	NO	NO	Essential Oil Blends
<b>Helias</b>	2017	NO	YES	Essential Oils, Blends, Diffusers, Body Products
<b>Jurlique</b>	1985	NO	YES	Hand, Face, Body Products, Essential Oils,
<b>L'Occitane</b>	1976	YES	YES	Hair, Body & Skin Products
<b>Majestic Pure</b>	2015	NO	NO	Essential Oils, Body Scrubs, Shampoos, and Skin Care Products
<b>Mountain Rose Herbs</b>	1987	YES	YES	Essential Oils, Blends, Diffusers, Bath & Body

				Products, Education Books
<b>Now Food-Now Essential Oils</b>	1948	YES	YES	Essential Oils, Supplements, Natural Foods
<b>Plant Therapy</b>	2011	NO	NO	Essential Oils, Kid Care Products
<b>REVIVE</b>	-	NO	YES	Essential Oils, Blends, Diffusers & Supplies and Carrier Oils
<b>Rocky Mountain Oils</b>	2004	YES	YES	Essential Oils
<b>Saje Natural Wellness</b>	1992	NO	NO	Essential Oils, Diffusers, Diffusers Blend, Essential Oil Blends, Body Care Products

Source: Aethos Oils, (n.d.); Aromatherapy Associates, (n.d.); Art Naturals, (n.d.); Aura Cacia, (n.d.); Aveda, (n.d.); Cab Beauty, (n.d.); Demamie, (n.d.); Doterra Essential Oils, (2019); Eden's Garden, (n.d.); Ellia, (n.d.); Group L'Occitane, (n.d.); H. Gillerman Organics, (n.d.); Helias Oils, (n.d.); Jurlique Skin Care, (n.d.); Majestic Pure Cosmeceuticals, (n.d.); Mountain Rose Herbs, (n.d.); Now Foods-Essential Oils, (n.d.); Plant Therapy, (n.d.); Rocky Mountain Oils, (n.d.); Natural Essential Oil Products: Revive Essential Oils, (n.d.); Saje. (n.d.).

Number Of Companies	Those With A Sustainability Tab	Products They Work With	Those Who Have Explanations About Sustainability
25	4	<b>Aromateraphy Products</b> <b>Diffusers</b> <b>Essential oils</b> <b>Hair, body, skin products.</b> <b>Supplements</b>	12 compaines mentioned.

### National Company Reviews in Essential Oil Industry

As a result of the analysis of 25 national companies in the Turkish market, unfortunately, it has been seen that no company has a sustainability tab. Additionally, only 9 companies mention sustainability on their websites (*See Table 4*). Companies have tried to make a difference by mentioning the natural ingredients of the products under titles such as certificates and natural products on their websites. The 9 companies that address the issue of sustainability are listed as follows: Bade Natural, Bodivi, Edy's Organics, Goya Botanicals, Misbahçe, Raqun, Rosece, Simya Evi, and The Elite Home. These companies have mentioned

sustainability, natural production and organic production in the about us, mission and vision tabs on their websites (Bade Natural, (n.d.); Bodivi, (2022); Edys Organics, (n.d.); Goya Botanicals, (n.d.); Misbahçe, (n.d.); Raqun, (n.d.); Rosece, (2021); Simya Evi, (n.d.); The Elite Home, (n.d.)). Websites of 2 companies could not be found. These companies are Meditolia and Rosemary. These companies carry out e-commerce through online sales platforms such as Trendyol, Hepsiburada, Dermoeccanem, Morhipo and Dermomarket.

Alfheim Aromatherapy, one of the companies that do not mention sustainability on their website, stated that they obtain their products from organic, wild plants *ethically harvested plants*, trees and seeds. At this point, conscious harvesting is important in terms of *sustainability* (Alfheim Aromatherapy, n.d.). Another company that has a statement on sustainability, Goya Botanicals, mentioned that they are producing 100% naturally grown and aromatic plant oils with the development of sustainable agriculture and local production (Goya Botanicals, Our Story, n.d.). For this, they say that plants *harvested at the right time* and with the *right methods* and that they work with academicians who are experts in both agriculture and chemistry while obtaining oil from these plants. Afterwards, they bring their products together with national and international users.

Misbahçe takes sustainability ethics as a basis in all its implementation phases. They try to use local resources as much as possible and to benefit from solar energy in many areas of production. The glass packaging and paper used to consist of recyclable or recycled materials (Misbahçe, Our Story, n.d.). Additionally, the purpose of the establishment of Raqun company is to bring sustainable additive-free, and harmless products that do not threaten human health to the consumer (Raqun, About Us, n.d.). They wish to be able to contribute to the formation of a healthy society for all humanity, nationally and globally. Finally, Simya Evi company set out with the slogan of “sustainable nature” (Simya Evi, About Us, n.d.). They produce products from nature, and natural plants, both in the cosmetics and food markets.

It has been observed that most companies attach importance to the fact that their products are produced from *natural ingredients* that do not contain additives. In addition, it is stated that the products are not tested on animals, they have organic certificates, they are 100% natural and they do not go through the chemical process. At this point, it can be said that national companies have partnerships with other international companies. However, the most important thing for the sustainability of medicinal plants is the *right harvesting practices*, which are mentioned by very few companies.

**Table 4: National Company Review**

COMPANY NAME	ESTABLISHMENT DATE	ARE THERE SUSTAINABILITY TABS ON THE COMPANY'S WEBSITE?	DOES THE COMPANY HAVE EXPLANATIONS ON SUSTAINABILITY?	WHICH PRODUCTS ARE THEY WORKING ON?
<b>Afye</b>	-	NO	NO	Kids Products, Herbal Oils, Personal Care Products, Supplements
<b>Aicha Lavanta</b>	2018	NO	NO	Lavander Essential Oil, Hair, Body, Face Products, Cloth pouches and masks
<b>Alfheim Aromaterapi</b>	2000	NO	NO	Essential Oils, Face, Hair, Body Products, Pet Products, Baby Products
<b>Bade Natural</b>	2016	NO	YES	Aromateraphy Products, Face, Body Products
<b>Bodivi</b>	-	NO	YES	Aromteraphy Oils, Essential Oils, Carrier Oils, Face Products
<b>Edy's Organics</b>	2019	NO	YES	Aromateraphy Products, Natural Soaps, Face and Skin Care Products, Accessories.
<b>Eloque Cosmetics</b>	-	NO	NO	Skin Care Products, Natural Oils, Natural Soap
<b>Florame Turkey</b>	-	NO	NO	Aromateraphy Products, Essential Oils, Skin and Face Care Products
<b>Gaia Organic</b>	-	NO	NO	Aromateraphy & Natural Skin Products
<b>Goya Botanicals</b>	2019	NO	YES	Essential Oils, Cold Pressed Oils, Maceration Oils And Hydrosols
<b>Sebat LTD / Gülhane</b>	1985 (foundation of Sebat Oil) 2018 (foundation of the Gülhane brand)	NO	NO	Aromateraphy Products
<b>Handeresi</b>	2014	NO	NO	Aromateraphy Products, Soaps, Face and Body Care Products

<b>Hekimhan Bitkisel</b>	2016	NO	NO	Herbal Teas, Pastes, Molasses, Cold Pressed And Essential Oils, Powdered Extracts, Liquid Extracts, Packaged Herbs
<b>Homemade Aromaterapi</b>	2012	NO	NO	Essential Oils, Skin, Face, Hair & Body Care Products, Men Care Products
<b>Hünnap</b>	2014	NO	NO	Supplements, Oils, Organic Products
<b>Mavili kapı</b>	-	NO	NO	Aromateraphy Products, Baby Products,
<b>Misbahçe</b>	2012	NO	YES	Aromateraphy Products, Skin, Hair, Face Care Products, Aromatic Colognes
<b>Nurse Harvey's</b>	Company was established in the middle of 1960. It has become a Turkish brand in 2012.	NO	NO	Baby and child products, Essential Oils, Supplementary Products
<b>Oilwise</b>	-	NO	NO	Aromateraphy Products, Skin and Face Products
<b>Raquun</b>	2019	NO	YES	Aromateraphy Products, Body and Face Care Products, Herbal Waters
<b>Rosece</b>	-	NO	YES	Natural Makeup Products, Skin, Body, Face Products, Essential Oils
<b>Simya evi</b>	-	NO	YES	Aromateraphy Products, Skin, Hair, Body Care Products
<b>Tabia</b>	2009	NO	NO	Natural Cosmetic Products, Essential Oils
<b>The Elite Home</b>	-	NO	YES	Cleaning Products, Aromateraphy Products, Natural Foods, Accessories

Source: Afye, (n.d.); Aicha Lavanta, (n.d.); Alfheim Aromaterapi, (n.d.); Bade Natural, (n.d.); Bodivi (n.d.); Edy's Organics (n.d.); Eloque Cosmetics, (n.d.); Florame Turkey, (n.d.); Gaia Organic, (n.d.); Goya Botanicals, (n.d.) Sebat, (n.d.); Gülhane, (n.d.); Handeresi, (n.d.); Hekimhan Bitkisel, (n.d.); Homemade Aromaterapi, (n.d.); Hunnap,

(n.d.); Mavili kapı, (n.d.); Misbahçe, (n.d.); Nurse Harvey's, (n.d.); Oilwise, (n.d.); Raqun, (n.d.); Rosece, (2021); Simya evi, (n.d.); Tabia, (n.d.); The Elite Home)

Number Of Companies	Those With A Sustainability Tab	Products They Work With	Those Who Have Explanations About Sustainability
25	0	Aromateraphy Products Baby Care Products Essential oils Hair, body, skin products. Supplements	9 compaines mentioned.

## CONCLUSION

There is an increase in demand of the market of medicinal aromatic plants, essential oils and traditional herbs. And this demand is expected to increase over the years. The frequency of harvesting medicinal aromatic plants for commercial purposes has increased and is being harvested with little prior experience and knowledge. Harvesting by so many irregular foragers, destructive harvesting practices have pushed many plant species into critical condition.

Leading international companies in the industry is analyzed, it is seen that only less than half of the international companies address the issue of sustainability. On the other hand, unfortunately, Turkish companies do not have a separate sustainability tab and only 9 companies made a statement about sustainability. Most of these companies only mentioned sustainability under the headings of packaging, distribution, and natural resource use. However, uncontrolled harvesting and wrong agricultural practices, which are the biggest cause of the extinction of medicinal plants, have been ignored by most companies.

The essential oil sector is of considerable size and will grow day by day. However, in order to maintain its dominance in the market, first of all, the plants must be harvested correctly and the companies must consider the sustainability principle. Companies need to attach importance to responsible production, organic agriculture, organic certification, waste management and environmentally friendly production.

There are resources on medicinal aromatic plants and essential oils in the literature, but there are limited and regional studies on sustainability principles. There is a lack of research on the market position of the essential oil industry, the increase in the demand for the products and sustainable harvesting.



Comprehensive studies in this field in the literature will increase awareness in the field of sustainability both academically and managerial and will contribute to the sector.

As a result, it has been determined that these efforts should be continuous and inclusive of a wide segment in order to provide more information and awareness to the producers and sellers of essential oils, which have an important share in our country's exports and are facing the threat of sustainability.

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