

PRACTICAL MARKET INSIGHTS INTO THE PRODUCT GROUP OF

Medicinal and Aromatic Plants



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1 Product description

Medicinal and aromatic plants (MAPs) are botanical raw materials, also known as herbal drugs, that are primarily used for therapeutic, aromatic and culinary purposes as components of cosmetics, medicinal products and traditional medicines, health food and phytopharmaceuticals and others such as condiment or herbal teas. They are also the starting materials for value-added processed natural ingredients such as essential oils, dry and liquid extracts and oleoresins.

Medicinal plants and extracts are increasingly important export products for many developing countries. As populations age and consumers' preference for natural health products increases, medicinal plants present a niche that exporters in many producing countries are looking to develop for sustainable production and export trade.

Today, over 3,000 botanical raw material species can be found in global commerce.

The market demand for natural ingredients with multiple sustainability certifications is increasing (e.g. organic cultivated + fair trade or organic wild + fair wild certified), as conscious customers around the world are demanding more and more information about the herbal supply chain, nature conservation and sustainability, in consideration of the increasing awareness that most medicinal plant species in global commerce are wild harvested and are not grown on farms. In fact, most species in commerce will not likely ever be farmed which necessitates paying close attention to sustainable resource management and biodiversity conservation in the natural habitats of wild plants.



Medicinal and aromatic plants are valuable treasures that can be found in forests (also referred to as non-timber forest products), in deserts, mountain areas and remote, untouched natural habitat. Demand for a wide variety of wild species is increasing with growth in human needs, numbers and commercial trade. With the increased realisation that some wild species are being over-exploited, and thus tried to be brought into cultivation systems. Cultivation can also have conservation impacts, such as reducing the extent to which wild populations are harvested, but it also may lead to environmental degradation and loss of genetic diversity as well as loss of incentives to conserve wild populations.

Given the demand for a continuous and uniform supply of medicinal plants and the accelerating depletion of forest resources, increasing the number of medicinal plant species in cultivation would appear to be an important strategy for meeting a growing demand. Though cultivation of MAPs supplies the market with consistent quality of the raw material, the active-ingredient levels are for most cultivated species lower in fast-growing cultivated stocks. Meaning, the properties may vary from wild collection to cultivation, due to presence or absence of secondary metabolites which the plants need in their natural environments under particular conditions of stress and competition.

There is a wide variety of plants within the MAPs category which can take specific directions, for instance for particular health products.

The most commonly used on the European market are, among others:

Parsley, basil, marjoram, mint, peppermint, spearmint, thyme, oregano, chamomile, calendula, hibiscus and liquorice. As well as caraway, fennel, cumin, anise, coriander, cornflower, rosemary and wormwood. In the following section, the focus is set on the most common species grown in Egypt:

FENNEL

Fennel – *Foeniculum vulgare* – is native to the Mediterranean region and is one of the oldest cultivated plants. This aromatic perennial tall stalk is consumed as vegetables, while the leaves and seeds are used as flavour in foods. Although the taste and aroma of fennel are sometimes mistaken for anise or licorice, the plant is actually related to caraway.

Fennel has various medicinal properties, due to its high content of vitamins (B₃, B₆, C) and minerals. It is best known for its benefits for the digestive system, but also its high flavonoid content stimulates the production of breast milk.

Additionally, fennel finds application in cosmetic products such as toothpaste and soaps, perfumery. Fennel is, moreover, an effective insect repellent.

BASIL

Basil is considered a sacred plant, even boasting a name with prestigious etymology: Basil comes from the Greek *basilikon*, meaning "royal plant." Sweet basil – *Ocimum basilicum* – is an annual herb of the family Lamiaceae, which is commercially cultivated and used for its aromatic qualities. Basil leaves are used both fresh and dried to give the specific flavour to foods.

Apart from culinary use, basil has been traditionally used as medicinal herb for the treatment of inflammatory diseases and the effects of aging, but also in perfumery industries.

In the latter, basil is applied as essential oil. Basil essential oil composition can vary, depending on a number of parameters inherent to the cultivation sites and practices, and results in there being several chemotypes. Basil from Egypt is of the linalool chemotype, while basil from India and Vietnam are of the estragole (or methyl chavicol) chemotype.



CHAMOMILE

Chamomile is known as German chamomile *Marticaria recutita* and Roman chamomile *Chamaemelum nobile* a very famous daisy plant.

Roman chamomile is native to western Europe and northern Africa, but today cultivated worldwide in temperate regions. German Chamomile is native to Europe and northwest Asia, where it still grows wild. It is cultivated in much of Europe and other temperate regions. The receptacle of the compound head is hollow, which distinguishes it from other types of chamomiles. The German variety is the most widely available for medicinal use and is biochemically distinct from the Roman variety.

Chamomile is rich in different bioactive compounds, antioxidant and phytochemicals and therewith carries many pharmacological and traditional properties. Traditionally, chamomile has been used for centuries as a mild astringent and healing medicine – from dried chamomile, used in herbal tea, to extracts such as essential oils for the external application.

MARJORAM

Marjoram (*Origanum majorana*) is an ancient medicinal and aromatic plant which has been cultivated in Egypt already 3,000 years ago. Marjoram is commonly recognised for its ability to spice foods. Also, the essential oil of marjoram is a cooking additive. Besides from culinary benefits, marjoram oil supports the immune and cardiovascular system.

Sweet marjoram (*Marjorana hortensis*) is a cultivated plant for the leaves and flowering tops, that are used dried or processed into essential oils in the food and pharmaceutical industries.



THYME

The most widely spread species of the Thymus genus used to produce dried thyme is *Thymus vulgaris* or common thyme. The wild thyme is *Thymus serpyllum*. Thyme is also used as a fresh culinary herb or as raw material to produce essential oils, extracts, and oleoresins.

HIBISCUS

Hibiscus sabdariffa is in dried form (hibiscus flowers, leaves, and dark red calyces) mainly known in tea and other beverage preparation, both for the taste as for the colouring properties. Hibiscus extracts are widely used in the food industry to give colour and flavour. New developments such as freeze-dried powder extract (stabilized with maltodextrin) offers a stable colourant for the industry.

The extracted colour is also a good alternative for the cosmetic and pharmaceutical industries. The red pigments contained in red flowers of the Hibiscus species are anthocyanins and are widely used as colouring agents.

SAFFLOWER

Safflower or saflor, *Carthamus tinctorius*, has some valuable characteristics which have made the plant important throughout the centuries. As a medicinal plant, safflower is used as a dried flower. But also as spice in foods, even used as substitute for saffron as less expensive, softer in taste and colouring in dark-orange.

Safflower oil is obtained from the safflower seeds, whereas the flower itself holds the medicinal properties and the dye source – the pigment carthamin. As dye, it is applied to foods, cosmetics, but also fabrics.

2 Legislative requirements

Legal requirements are the minimum requirements which must be met by products marketed in the EU – the must-haves in order to enter the market. Products which fail to meet these requirements are not allowed on the EU market. EU legislation sets the basis for legal requirements in the EU.

For a full list of legal requirements, the new [My Trade Assistant](#) of Access2Markets provides a complete overview, where specific product code are selected under Chapters 07 and 08.

2.1 GENERAL FOOD LAW

Food safety is the key issue in EU food legislation, in which the General Food Law is the framework regulation. The legislation also introduces requirements on traceability. All information can be found in the [Regulation \(EC\) No 178/2002](#).

2.2 PRODUCT SAFETY FOR FOOD PRODUCTS

When exporting MAPs to Europe, compliance with the requirements for food safety and product quality are crucial.

The EU has set **Maximum Residue Levels MRLs** on pesticides in food products to minimise health and environmental risks. The MRL, the pesticide residue, lies 0.10 parts per million (ppm) for spices and 0.05ppm for herbs. For more details on the specific pesticides, the [EU pesticide database](#) provides all information relevant. A regular update is recommended, as Europe's food safety authorities amend levels on new developments of the market.

Please note: these are legal requirements, as baseline, however, countries and buyers may have specific requirements, which go beyond the legislative thresholds.

To prevent contamination of spices with insects and other microbiological contaminants, preventive measures can be e.g. heat treatment or fumigation. It is essential to use only officially approved disinfectants. The EU has banned methyl bromide and ethylene oxide. Therefore, food safety measures such as the implementation of HACCP are gaining importance, as managing the risk of cross-contamination. Also, packaging material, as well as pallets and containers can pose a threat as potentially treated with ethylene.

The EU calculates maximum residues as the total amount of ethylene oxide and 2-chloroethanol expressed as ethylene oxide.

Contaminants are substances which have not been intentionally added to food but which may be present as a result of the various stages of its production, packaging, transport or holding. For instance, contaminants are aflatoxins, heavy metals, dioxins and nitrates. Similar to the MRLs for pesticides, the European Union has set limits for several contaminants.

Contamination of spices and herbs with plant toxins is a frequent problem during production. Thus, the European Commission developed new maximum levels for contaminants, which are valid from July 2022.

Weeds can contain high amounts of alkaloids such as Pyrrolizidine alkaloids (PA) and tropane alkaloids (TA), which can be transferred to nearby plants as vegetables, MAPs etc. Both TA and PA are toxic to humans and animals, some even extremely toxic. The EU Commission is working on a regulation which sets maximum levels for PA in foodstuffs, at present this only exists for baby foods. Proposed limits for PA are 400 µg/kg for dried herbs and cumin seeds, and 300 µg/kg for mixtures where the proportion of the ingredients is not known. The maximum levels refer to the total amount of 21 pyrrolizidine alkaloids and N-oxides, and 14 more pyrrolizidine alkaloids and N-oxides. These proposed levels challenge not only the conventional MAPs production, but especially the organic.

The implementation of **hygiene and phytosanitary** measures are outlined in the [EU legislation on hygiene of foodstuffs](#). Certification of such is voluntary and falls under the category non-legal requirements.

2.3 ALLERGENS

Among spices and herbs, celery and mustard are the only two labelled as allergens by the European Union Labelling Directive. Still, not all other spices and herbs may be safe to use by people with food allergies and intolerances.

Especially for dried herbs and spices, the European Spice Association ESA has published the [Allergen Risk Assessment Model for Dried Herbs and Spices](#). This is an important tool, as contamination with allergens can happen at any stage of the supply chain.

- + Seed contamination at primary production: cereals, seeds or other allergens contaminate the seeds for sowing, if grown near allergenic plants.
- + Seed contamination due to crop rotation or wind
- + Contamination during the export process: via transport or packaging or later
- + During secondary production: mixing of spices and herbs without listing all ingredients.

2.4 LABELLING AND PACKAGING

Food placed on the EU market must meet the legislation on food labelling.

The European Union (EU) requires that the text on the label must be written in one of the official languages of an EU Member State and be understandable for the consumer. Appropriate labelling must present at a minimum

- + Common name of the product,
- + Country of origin,
- + Name and address of producer, packer, importer, brand owner or seller in the EU – “packed for:”,
- + Net content weight,
- + Producer identification / lot number,
- + Info on certification,
- + Additional info about quality class, size, post-harvest treatment, etc.

Packaging marketed within Europe must comply with the general requirements, which aim at protecting the environment, as well as with the specific provisions designed to prevent any risk to the health of consumers. The packaging must protect the product against contamination, leakage, and dehydration. Also pay attention to your buyer's preference for presentation, such as individual wrapping or sortation (for example, one side up). Products and packaging should be uniform.

TIPS

For MAPs, pesticide management is crucial and starting with high responsibility on the production level. Buyers will always require samples and test beforehand, and some – especially in the organic context – have zero-tolerance for any pesticides.

For more details and further info consult the CBI (www.cbi.eu) and the Import Promotion Desk (www.importpromotiondesk.com) websites.

Check out the [Factsheet on Food Traceability of the European Commission](#).

Update yourself regularly on the EU level MRLs and additionally on specific national levels.

Find out more about the prevention and reduction of lead contamination in the [Code of Practice](#) published by the FAO Codex Alimentarius.

The EU introduced the European rapid alert system for food (and feed) products (RASFF) as a tool to exchange information on the enforcement of EU food safety legislation. [Check](#) on registered border rejections to understand the process.

Familiarise yourself with the Regulation [EC/1756/2004](#) on plant health. Annex VI (page 170 – 171) of [Directive 2000/29/EC](#) provides an example of a phytosanitary certificate.

Read more about [labelling and packaging guidelines](#) for foodstuffs in [Access2Markets](#).

The [EU Directive 2019/904](#) on the reduction of impact of certain plastic products on the environment limits the use of single-use plastics by transferring the cost of waste and responsibility to the producers. With the [European strategy for plastics](#), more and more buyers will demand alternative and environmentally friendly packaging.

Please keep in mind that buyer requirements can differ from the legal requirements, which are only the baseline.

3 Non-legislative requirements

Non-legal requirements reach beyond legislation, as companies can go further in their requirements than legislation. The main categories of additional requirements are environmental requirements and social (labour) requirements.

Food Safety is top priority in all European food sectors, and importers increasingly require not only the implementation but also the certification thereof.

Not only Food Safety, but also guaranteed information on social compliance become – especially in the context of products produced in the organic context – a common requirement.

3.1 AGRICULTURAL & WILD COLLECTION PRACTICE

GACP

Due to the complex and changing nature of plant raw material the control, storage and processing is of outmost importance for the production of herbal medicines and foodstuffs. Consistency in quality from the sowing to the processing requires a quality management scheme based on Good Agricultural and Collection Practice [GACP](#) for starting materials of herbal origin. The World Health Organisation WHO, together with the United Nations and other specialized agencies (e.g. European Medicines Agency EMA) have developed these guidelines.

GACP covers the cultivation and wild collection as well as the harvest of plants, algae and mushrooms. For the production of herbal medicines, the processing stages are guided by the GMP – Good Manufacturing Practices.

3.2 FOOD SAFETY & PROCESSING

Buyers commonly require that their suppliers have a quality/food safety management system in place. These systems require companies to demonstrate their ability to control food safety hazards in order to ensure that food is safe at the time of human consumption.

HACCP

In general, all buyers in the supply chain, such as traders, food processors and retailers, require the implementation of a food safety management system based on hazard analysis and critical control points (HACCP). This is for all European importers a minimum requirement.

ISO 22000

Another food safety standards is the industry-developed standard by the International Organisation for Standardisation ISO. The standard sets out the requirements for food safety management and can be certified and at the same time is working with other ISO standards.

GFSI CERTIFICATIONS: FSSC22000, IFS AND BRC

The Global Food Safety Initiative GFSI is a private organisation and global network for the food industry. Several Standards are officially recognised by the GFSI, covering different levels of food safety standards.

FSSC22000 is based on the criteria of ISO22000, but the FSSC foundation added specific requirements. As the FSSC22000 is accredited by GFSI, it enjoys international trust.

Not only for the handling or processing of fresh fruits and vegetables, but also for medicinal and aromatic plants in food, the North-western European market requires – especially in for the retail sector – to comply with other GFSI standards such as **BRC Global Standards**, as general standard for hygiene and food safety. But also, the **IFS International Featured Standard**.

3.3 SOCIAL COMPLIANCE & SUSTAINABILITY

Though quality remains priority of the buyers, social compliance gains importance. There is growing attention to the social and environmental conditions in the producing areas. Initiatives in and attention to corporate social responsibility (CSR) vary across the various parts of Europe. In the eastern part of Europe, fewer buyers require strict social compliance, while there are buyers in Western Europe which have their own compliance program.

Additionally, the EU and specific countries within, prepare at present a **Supply Chain Act**, which requires full traceability and the compliance with labour laws. This will be a legislative requirement in future.

The **SMETA** (Sedex Members Ethical Trade Audit) is the most widely used social audit, as there is at first a self-audit feasible before getting into the certification schemes. Also, the Amfori **BSCI** enables the producing companies to improve social performance in the supply chain.

Fair trade labels are not commonly required in MAP trade. However, relevant certification schemes are **Fair for Life** by Ecocert or **Fairtrade** by FLO.

The **Rainforest Alliance** is an international, not for profit sustainable development organisation that works to conserve biodiversity and ensure sustainable livelihoods for grower communities. The seal means that the certified (agricultural or forestry) product or ingredient was produced using methods that support the three pillars of sustainability: social, economic, and environmental. And focusing on the main themes

- + Forests – best practice for conservation
- + Climate – climate-smart practices to build resilience
- + Human Rights – advancing the rights of rural people
- + Livelihoods – ecosystem health & economic stability

As a certification combining social compliance with sustainability, the Rainforest Alliance gains increasingly interest among the European buyers. A best-case scenario could be the Rainforest Alliance certification together with organic certification.

3.4 ORGANIC

Over decades, and strengthened again by the Covid-19 pandemic, the demand for organic products rose significantly. It cannot be named a niche anymore. The main driver for the organic market in Europe is the growing consumer concerns over food safety, the environment and human health which are fuelling demand for organic products across Europe. More than ever before, European consumers are buying into the organic offering.

To be granted the organic certificate, the production methods have to comply with the [European legislation](#) for organic farming and need to be audited regularly by an accredited certification body.

All organic products imported into the EU must have the appropriate electronic certificate of inspection (e-COI). These certificates are managed through the [Trade Control and Expert System \(TRACES\)](#).

On January 1, 2022, the [new organic regulation \(EU\) 2018/848](#) will enter into force together with the new Official Control Regulation. The new regulation is designed to ensure fair competition for farmers whilst preventing fraud and maintaining consumer trust. A very positive aspect is a new process for group certification specifically interesting for small farmers.

TIPS

Exchange closely with the European buyer regarding the requirements.

Evaluate the status-quo of compliance with standards and assess a certification carefully. Such certification, implemented by most competitors, keep producers abreast of the market.

Focus on GFSI Food Safety standards, as those enjoy the best reputation in Europe regarding hygiene and food safety.

Implement a food safety management system and check the [FAO Guidelines for the implementation of HACCP](#).

Pay attention to the upcoming Supply Chain Act, which is developed within the EU. Even it is looks like it would only concern big companies (> 3,000 employees for the moment) these bigger companies will certainly send the pressure down to the whole supply chain, ending with the producers. A plan how to prepare for that should be evaluated as soon as possible.

Generally, laboratory results from Egyptian laboratories are not sufficient in the eyes of European buyers. Easiest way is to choose an accredited laboratory in the importer's country or check with the buyer which laboratory is preferred.

Check the changes of the new organic regulation. See links at the end of this study.

Be prepared to tell the story of your company, the people working along the chain and the products. Next to quality, the questions where products are coming from, who was involved etc. gain of significant importance.

Consult [ITC's Sustainability Map](#). It allows, for instance, a look into standards for a specific sector (agriculture) and products (various options) in a specific market (Europe). Additionally, a self-assessment can be conducted etc.

4 Trade developments

Measuring the size of the sector is a key challenge in itself. This is mainly due to the fact that there is no comprehensive and exhaustive listing of harmonised tariff codes for MAPs and their extracts. Many countries are struggling with the lack of specificity of their tariff schedules and are looking to add more specific 8- and 10- digit codes for their most important botanical imports and exports. However, those are not necessarily applicable to all countries and therefore not consistent.

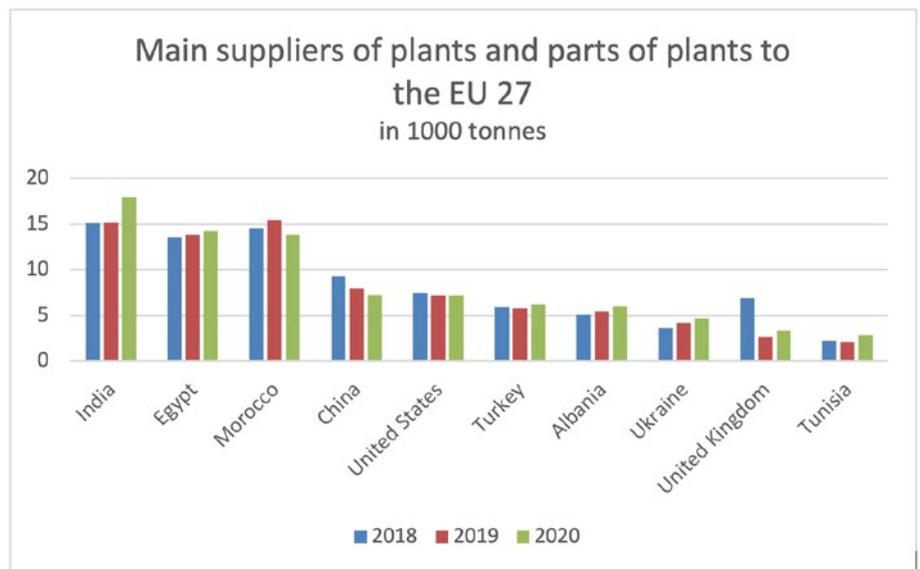
Medicinal and aromatic plants are offered in a wide variety of products on the market. At least every fourth flowering plant is used. The enormous demand in botanicals results in a huge trade from local to international level. The international trade is dominated by only few countries. About 80 % of the world-wide imports and exports are allotted to approximately 12 countries with the dominance of Asian and European countries. Whereas Japan and the Republic of Korea are the main consumers of MAPs, and China and India are the world's leading producing nations, Hong Kong, the USA and Germany stand out as important trade centres.

In general, the European market for MAPs used as food, cosmetic or health product ingredient is growing steadily. The quality requirements create a specific hurdle in the trade with MAPs from any origin. Especially from cultivation, organic certified MAPs are on the frontline of demand as the pesticide issues remain. As the analysis in laboratories gets more detailed every year, more pesticides and contaminants can be found. Producers and exporters of MAPs have to face more requirements in terms of quality but also regarding traceability and documentation along the supply chain.

As no specific trade category (HS code) for MAPs exists, only a very general or very specific look into the trade data is feasible.

For the category of plants and parts of plants, including seeds and fruits (HS 121190), the main global importers are the United States, Germany, Japan, France.

FIGURE 1:
MAIN SUPPLIERS OF THE HS CODE 121190
TO THE EU27 COUNTRIES BETWEEN
2018 AND 2020, IN 1,000 TONNES.
SOURCE: ACCESS2MARKETS



Imports of the category of the HS code 121190 (flowers, bark, roots, leaves, freeze-dried herbs, etc) to the EU27 countries are much higher in terms of volume in the year 2018-2020. The main suppliers are India, Egypt and Morocco.

The HS code 0909 (Seeds of anise, badian, fennel, coriander, cumin or caraway) is mainly imported by China, the United States, India, Bangladesh and Germany. In this category, the main suppliers for Germany are Egypt, Turkey, China, India and Balkan countries. Egypt being a stable supplier to German over the past five year, with a slight increase each year in terms of value.

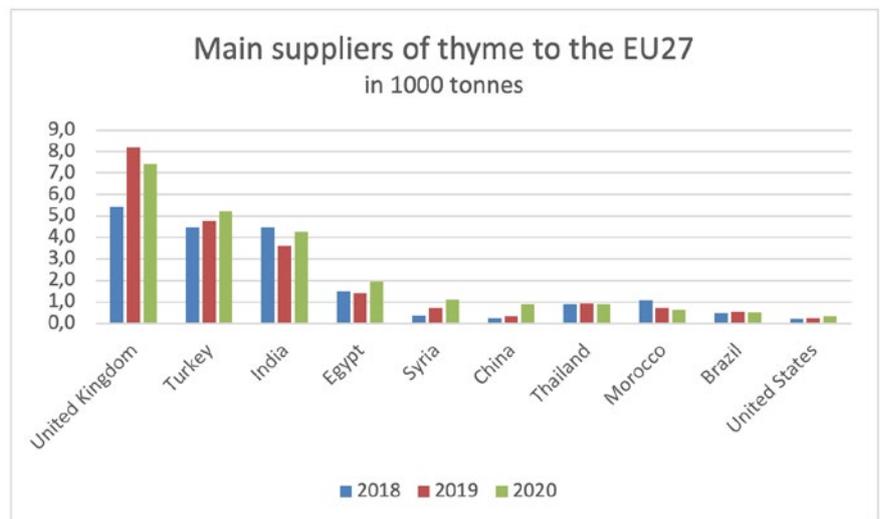
When diving a bit more in detail (as much as feasible) into the category, Egypt is the main supplier of the product group of juniper berries and seeds of anise, badian, caraway or fennel (HS code 090961). Which means coriander and cumin are not included, and not exported to the EU countries to the same extent.

FIGURE 2:
MAIN SUPPLYING COUNTRIES OF
JUNIPER BERRIES AND SEEDS OF
ANISE, BADIAN, CARAWAY OR FENNEL
(HS CODE 090961) TO THE EU27 COUN-
TRIES, 2018-2020, IN 1,000 TONNES.
SOURCE: ACCESS2MARKETS



Suppliers of MAPs to the EU27 (excluding the United Kingdom) of thyme (HS code 091099) are the United Kingdom, Turkey and India. United Kingdom being a main supplier, underlines the strong intra-European (not just EU) trade of specific products such as thyme.

FIGURE 3:
MAIN SUPPLIERS OF THYME
(HS CODE 091099) TO THE EU27 COUN-
TRIES, 2018-2020, IN 1,000 TONNES.
SOURCE: ACCESS2MARKETS



Europe is the largest dried thyme importer in the world, accounting for a 50% share of the world's total imports. Germany is the largest dried thyme importer in Europe, providing specific opportunities for organic suppliers. Aside from Germany, opportunities for new developing country suppliers can be found in other large and growing markets, such as Spain, Belgium, the United Kingdom, France, and the Netherlands.

The use of medicinal and aromatic plants has never been out of focus throughout history. Our time, on the other hand, is witnessing a different approach to their utilization. For the first time in history, they have become industrial products for world-wide use. New concepts, such as nutraceuticals, cosmeceuticals, phytotherapy, aromatherapy, etc. are widening their use and new applications in functional foods, animal husbandry and agricultural pest management are taking place. Thus, the trade in MAPs will follow its upwards trend also in the upcoming years – globally, but Europe being a major region of MAP imports.

5 Market trends

HEALTHY LIVING

Healthy lifestyle habits are becoming the normal way of life as concerns over obesity, food sensitivity and people affected by disease continue to rise. However, perceptions of healthy living are shifting beyond just physical health to represent a much more holistic view, where food, exercise, mental well-being and broader lifestyle issues are seen as a whole entity.

The use of medicinal plants has been done since ancient times and may even be considered the origin of modern medicine. Even before the pandemic, there was an increasing interest in botanicals to prevent, treat and to relieve conditions. Herbal remedies – from teas, to supplements, to processed essential oils etc.

Consumers – not only in Europe - increasingly buy organic products as personal health, wellness and nutrition gain significant importance and might entail new developments such as de-globalisation of food supply chains, food security and governmental exertion of influence, etc.

The main driver for the organic market in Europe is the growing consumer concerns over food safety, the environment and human health which are fuelling demand for organic products across Europe. More than ever before, European consumers are buying into the organic offering. However, brands need to step up efforts to gain consumer trust. The added value of the product – the story behind the product – needs to be transferred along the entire supply chain. Organic is not enough anymore, meaning it is embedded in wider health and ethical positioning.

SUSTAINABILITY

People at all levels in the value chain are gaining interest in MAPs produced and traded under more sustainable and responsible practices. This trend relates to many aspects along the supply chain, including working conditions, water use, waste management, among other things. And goes also back to consumer awareness growing as transparency is increasingly requested.

Not only the organic but the more sustainable way of cultivation reduces the risk of pesticides in the environment and lastly in the consumers' food, health products and cosmetics. In this respect, also the consumer is increasingly interested in the product one is consuming, but also to understand the supply chain – where the product and its ingredients are coming from.

Along, the issues of reducing packaging and establishing alternatives has risen, as part of the sustainability movement. Since 2017, there is an EU strategy for plastics, recommitting to work towards the goal of ensuring that all plastic packaging be recyclable by 2030. Less and recyclable plastic is the new standard. In the long term, reduction to a minimum or even completely replacement by alternative, biodegradable materials, is to be expected.

CONSERVATION & CHANGE

Genetic biodiversity of traditional medicinal herbs and plants is continuously under the threat of extinction as a result of growth-exploitation, environment-unfriendly harvesting techniques, and loss of growth habitats and unmonitored trade of medicinal plants.

As mentioned before, the production of botanicals relies to a large degree on wild-collection. However, utilization and commerce (increasing commercial collection, unmonitored trade, habitat loss) of wild plant resources lead to incomparably growing pressure on plant populations. Conservation concepts and measures which have to meet future supply and the provisions of species conservation range from resource management, cultivation, shifting processing from consumer to source countries, species conservation to trade restrictions or even trade bans.

From changes to the times when plants are flowering, fruiting and harvested, to disruptions to nature's synchronization between plants and their insect pollinators, climate change is exerting significant pressure on the botanical supply chain. It is not the unpredictability of weather, it's the scale and frequency of large weather events that can cause total crop failure. Or on a lower scale, the harvest time has become increasingly difficult to predict. Such event happening are impacting the harvest time or whether it will happen at all – not just for medicinal plants but for any food crop.

STANDARDS & CERTIFICATION

Food safety standards such as GACP and HACCP developed into pre-requisites for trade with Europe. Moreover, not only the legal requirements in Europe request full traceability (documentation), but also the independent confirmation of practices in production.

When complying with the high standards and certifications of the European market, this does not only satisfy the export market, but shall also support the producer's internal system and risk management.

To mitigate the increasing concentration of buyer power, the European Commission proposed a new directive to protect small and medium-sized suppliers in the food supply chain from unfair trade practices of economically stronger buyers. The directive aims at protecting farmers, processors, distributors, producer organisations, as well as suppliers from outside the European Union. The proposed directive was agreed in December 2018 and will be implemented over the next years. Once fully adopted, countries in the European Union will have two years to integrate the directive into their national laws.

SUPPLY CHAIN – DIVERSIFICATION

The outbreak of the Covid-19 pandemic in 2020 disrupted some of the existing trends in medicinal and aromatic plant sector. But as long as the supply chain remained intact, the import was able to continue – with the burden of increasing transit times and costs.

Not only the pandemic, but together with the logistic challenges of the last years and the steadily changing global climate, the supply chains are at risk. Therefore, importers (not only in Europe) actively implement spreading risk policies of their supply chains by building up more than one production bases that are in distinct agro-climatic and geopolitical zones. How much impact global or even regional events have on the global food supply chain, makes the consumers rethink the contribution to this system and how to better support local economies and to reduce carbon emissions as well as food and packaging waste.

Excursus: Egypt is an important chamomile country, but supply has been impacted by both climatic and geopolitical events. In the year before the Arab Spring, it snowed during the flowering period of the Egyptian chamomile – the first snow ever. It stunted the growth of the flowers, and it changed the chemical composition, therewith the essential oil and the yields were lower. Then the revolution struck and supply to the world paused.

6 Market channels and segments

Medicinal and aromatic plants are sold through different channels to and on the European market, highly dependent on the application and the use.

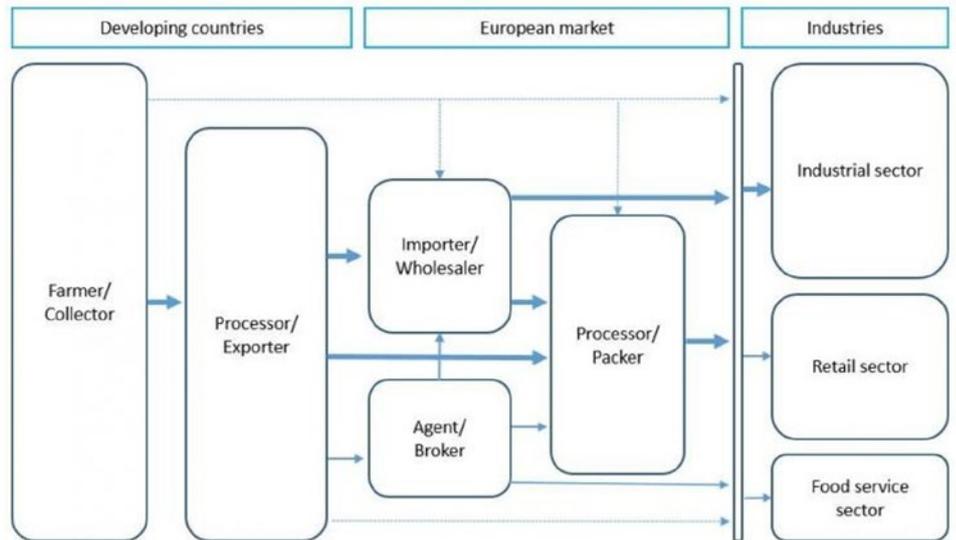
MAPs are mainly exported as dried, potentially cut or ground, product. This product can enter the market through agents, or directly supplied to food processors or food service companies. Some wholesalers also have packing facilities and usually supply private label.

Importers and wholesalers can be general spice and herbs importers or further specialised in specific roles. Some exclusively deal with ingredients aimed at the processing industry while others pack for retail chains. Retail chains have increasingly outsourced the purchase to importers with specific product focus.

In the end, the consumers determine the requirements for the products and therewith influence the supply chain's dynamics. This top-down structure puts pressure on the chain but brings at the same time more value-added product to the market.

Please note: transparency and a clear traceability along the supply chain is essential in the MAP trade with European importers. With the interest in the story behind the product, pure traders and exporters without the direct connection to cultivation or wild collection a lacking an essential component.

**FIGURE 4:
TRADE CHANNELS OF MAPS
IN EUROPE. SOURCE: CBI**



ingredient for tea production. Thus, the importer can be directly the company selling the condiment and mixing the tea but can also be an importer focused on the procurement, selling it on to specific small to large size manufacturers.

In Europe, herbal extracts from MAPs are mainly produced in Europe itself. Meaning the herbal dried raw material is being imported. Unlike essential oils are purchased as such in the countries of origin.

In this study only dried MAPs are covered. It does not apply in the same structure when looking at processed MAPs such as essential oils. Please refer to the CBI [study](#) on essential oils for further details.

MAIN EUROPEAN TRADE FAIRS – FOR MAPs:

MAP EXPO



is an international event focused on connecting players in the full supply chain of medicinal and aromatic plants from seed and soil, research and development, production and processing to final product or extract. The program of the Map Expo includes also seminars, round-table sessions along with networking and matchmaking.

www.map-expo.com

BIOFACH



in Nuremberg, Germany, is the world's leading trade fair for organic food and the largest international meeting of the organic sector. More than 2,900 international exhibitors present the latest organic products, trends and innovations regarding organic food and beverages, and also natural and organic cosmetics in the co-located Vivaness trade fair.

Biofach and Vivaness are accompanied by several congresses, seminars and conferences.

www.biofach.de

FOOD & HEALTH INGREDIENTS EUROPE



Health ingredients (Hi) Europe and Food ingredients (Fi) Europe are co-located events, one year in Paris, France, and the other year in Frankfurt a.M., Germany.

These two trade fairs combined in the one ingredients event, relevant for the food&beverages industry, but also the ingredients with health benefits.

www.figlobal.com

ANUGA & SIAL



Every year in October for five days either Sial or Anuga takes place.

Anuga is the world's leading food fair for the food and beverage industry – for retail trade, food service and food processing, which takes place every two years in Cologne, Germany.

Every other year, producers, importers, buyers and retailers, media specialists and independent associations of every shape and size meet at the largest exhibition venue in Paris, France, at **Sial**.

www.anuga.de

www.sial.com

7 Market competitiveness

In general, for being competitive for the export to Europe, it is crucial to comply on the one hand with the legal requirements, but also to have additional food safety measure in place. The social component is increasingly of interest for the importers, which implies also a "story to tell".

As MAPs are facing several qualitative challenges – starting from the appropriate harvesting time to adequate drying process, internal laboratorial checks etc – companies need to focus on a traceable chain, a thorough documentation and specific quality dedication.

The main suppliers of MAPs and main competitors are, among other bigger countries such as India, China and European countries:

Egypt is one of the world's leading producers of dried culinary herbs, including significant volumes of dried basil, marjoram, parsley, dill, thyme and mint. At the same time, Egypt is one of the leading herb exporters to Europe, so it can be considered as a strong competitor to suppliers from other countries. One of the sustainability issues Egyptian producers face is having to use polluted water from the river Nile, and reoccurring pesticide issues have made their way into the reputation of the country.

Morocco is specifically strong in dried rosemary and dried thyme, but particularly known for MAPs from wild collection rather than cultivation. Thyme in Morocco is not grown in significant volumes, but mostly collected in the wild. The Atlas Mountain range in Morocco offers great wild habitat, with the chance for product without pesticide influence.

Ukraine's territory accounts to about 30% of wild or partly wild flora, with a wide range of species. Especially the Carpathians are a diverse source of MAPs, such as dandelion, periwinkle, marjoram, wild strawberries, chamomile, black currant, wild blueberry, lavender, mint, melissa, centaurium, nettle, celandine, St. John's wort, plantain and buckthorn. As Ukraine is turning towards the European market within the last years, and due to wide regions which have never seen pesticides, the interest of the European importers rises. Though offers a slightly different variety in MAPs – just as the Balkan region, for instance - then the previously mentioned MAP supplying countries.

TIPS

In contrary to the vast possibilities of the Egyptian MAPs sector, the reputation and trust in terms of quality and especially food safety is still an issue. It is recommended to check to which market Egyptian products are finally going. It is not always the market where the buyer is located. That means sometimes food safety is not a real issue but in most of the cases it will be the central question of being listed.

Regarding the new Supply Chain Act the focus will be even more on tracing back your products to the specific field. Experience shows that some supply does not even originate from Egypt. Be aware of the fact that buyers will need increasingly information about the source of origin and regarding Supply Chain Act about the working conditions on the farms and in the production facilities.

The supplier should be prepared to the new Supply Chain Act which seems to be a challenge at the moment but can easily turn into a comparative advantage in the future.

Especially in the MAP sector, consider that the importers can do testing and analysis of the products again in own or local laboratory to double-check the source of origin, among other aspects. This is to fight fraud.

8 Useful sources

CBI Market Information:	www.cbi.eu
Import Promotion Desk:	www.importpromotiondesk.com
ITC Trade Map:	www.trademap.org
EU Pesticide Database:	https://ec.europa.eu/food/plants/pesticides/eu-pesticides-database_en
European Food Safety Authority Data Reports:	www.efsa.europa.eu/en/data/data-reports
data.europa.eu:	https://data.europa.eu/en
Access2Markets:	https://trade.ec.europa.eu/access-to-markets/en/content/welcome-access2markets-trade-helpdesk-users
Access2Markets Statistics:	https://trade.ec.europa.eu/access-to-markets/de/statistics
Codex Alimentarius:	www.fao.org/fao-who-codexalimentarius/en
Global Food Safety Initiative:	https://mygfsi.com
Information on Sedex:	www.sedex.com
Amfori :	www.amfori.org/content/amfori-bsci
"Supply Chain Act"/ Supply Chain Due Diligence:	www.europarl.europa.eu/RegData/etudes/BRIE/2020/659299/EPRS_BRI(2020)659299_EN.pdf
Info on new organic regulation:	www.eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32020R1693

SOURCES

CBI (2020): Market information on Spices & herbs and Natural ingredients for Cosmetics and Health Products.

www.cbi.eu/market-information/spices-herbs

www.cbi.eu/market-information/natural-ingredients-cosmetics

www.cbi.eu/market-information/natural-ingredients-health-products

International Trade Centre: Medicinal and Aromatic Plants and Extracts

www.intracen.org/itc/sectors/medicinal-plants/

International Trade Centre: Most important MAPs exported products (in terms of value and volume), globally: www.intracen.org/uploadedFiles/intracenorg/Content/Exporters/MNS/Medicinal%20Plants-%20Prodcuts%20list.pdf

International Trade Center: Trade statistics: www.intracen.org/itc/market-info-tools/trade-statistics/

Schippmann, Leaman, Cunnigham (2006): A Comparison of cultivation and wild collection of medicinal and aromatic plants under sustainability aspects.

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