

PRACTICAL MARKET INSIGHTS INTO THE PRODUCT

# Saffron



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Saffron has accompanied all civilizations, whether for its culinary role, for its quality of dye or its ancestral virtues rooted to folk medicine. Today, saffron is considered to be the most expensive spice, one of the reasons why is also known as the "golden spice". Growth in the natural products industry has led to great interest in natural ingredients for food, cosmetic and health application – in all three of which saffron can be used.

# 1 Product description

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Saffron is often called the "golden spice", which does not only go back to the rich colour and exquisite flavour, but also the fact that one kilogram of dry saffron requires around 150,000 stigmas of the saffron flower. Thus, dried saffron is generally regarded as the most expensive spice.

Saffron – *Crocus sativus* – is growing to a maximum height of 12cm and is usually not seen in the wild, as due to its selection in the search for longer stigmas the plant has become sterile. The cultivation of saffron is largely done manually, as is the harvest of the delicate stigmas. The purple flower has three-pronged styles with a crimson stigma (25-30mm) in each style.

## CODE FOR SAFFRON: HARMONISED SYSTEM (HS)

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HS Code	Description
09	Coffee, tea, maté and spices
0910	Ginger, saffron, turmeric, thyme, bay leave, curry and others.
<b>091020</b>	<b>Saffron</b>

# 2 What is the demand for Saffron in Europe?

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## 2.1 USE OF SAFFRON

### CULINARY USE

Saffron is first and foremost used as a spice in global cuisines. Hailing from the Middle East, this spice can be found in a range of dishes around the globe, from Spanish paella to Indian recipes and Swedish buns. Saffron acts as a spice not only as flavouring agent, but also as food colouring.

Saffron can be consumed directly or as an extract, in teas or in a supplement.

Crocin and crocetin are the colouring principles of saffron. Saffron shows good overall performance as a food colourant because it is stable toward light, oxidation, microbiological attack and changes in pH.

Saffron is generally considered a colouring food in the EU, rather than an additive food colour. Food (and flavourings) with a secondary colouring effect, like saffron, that are usually consumed as such or used as characteristic ingredients of food, should not be considered as food additives and thus can be called colouring food or colouring foodstuffs.

### MEDICINAL USE

From ancient times, saffron is widely used as drug to fight diseases and to promote health. Characteristic components of saffron are crocin – responsible for the colour –, picrocrocin – responsible for the bitter taste – and safranal – responsible for odour and aroma. All three are antioxidants, on which the main health claims of saffron are based upon.

Saffron's antioxidants have proven to protect the body from harmful free radicals that may cause a various ailments and diseases. These antioxidants support fighting against oxidative stress and free radicals, which are relevant in various health conditions, such as heart disease, the nervous system, inflammation, depression and coughing.

Saffron petals are the main by-product of saffron processing, containing of several active ingredients, such as mineral agents, anthocyanins, flavonoids, alkaloids and others. Thus, dried saffron petals find application in health-related products, and due to its antioxidant compounds, the petals are valuable ingredients in cosmetics.

### COLOURING AND PERFUMERY

In manufacturing, saffron extract is used as a fragrance in perfumes, as a colourant and as a dye for cloth.

Saffron is one of the most ancient perfume ingredients, popular in Ancient Egypt, Greece and Rome, often as a "single note" perfume, as well as in more complex blends. Until today, saffron is a widely used perfume ingredient.

Historically, plant pigments have been used to colour food and also cosmetics. The current trend matches towards healthy natural ingredients incorporated in cosmetic products, ruling out synthetic substitutes.

Saffron, as natural dye offers good biodegradability, lower toxicity and less allergenic than synthetic dyes.

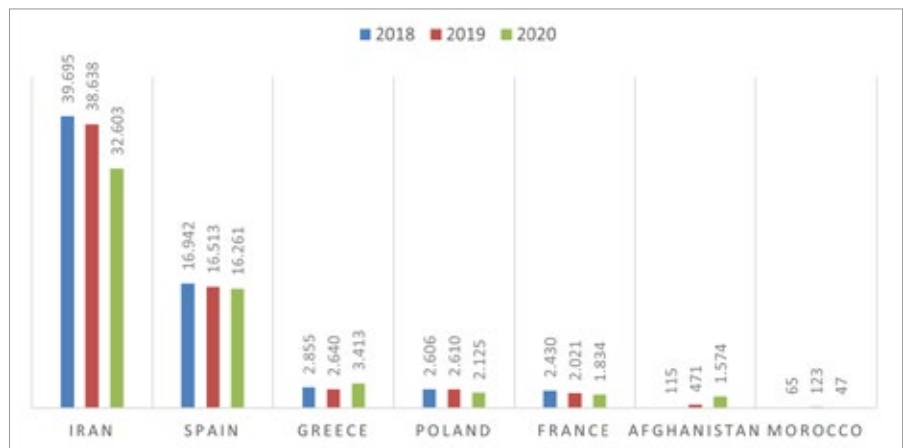
## 2.2 MOST PROMISING EUROPEAN MARKETS

In 2020 global context, among the top 5 exporters of saffron, Spain ranks second after Iran, followed by Afghanistan, Greece and France. Although Spain is a major producer of saffron, the European country also imports saffron mainly from Iran (56,000kg in 2020) and to a minor extent from Afghanistan (2,000kg).

Saffron imported to Europe also presents Iran and Spain as the main supplying countries in 2020, followed by Greece, Poland, France and Afghanistan. The mentioned European countries, especially Spain and Greece, have a traditional cultivation of saffron. Over the years, the supplies have been stable. Afghanistan could increase the exports of saffron to Europe from 115,000 Euro in 2018 to almost 1.6 million Euro in 2020. Taking a special look at Moroccan exports, the value doubled from 2018 to 2019 (65,000 € to 123,000 €), but went back to 47,000 € in 2020. European production is facing a decline in the past years, due to the increasing labour cost and migration of labour to industrial jobs.

**FIGURE 1:  
TOP 6 SAFFRON SUPPLYING COUNTRIES  
TO THE EU27 AND MOROCCO, COMPARING  
THE IMPORT VALUE IN 1,000 €  
IN THE YEARS 2018, 2019 AND 2020**

Source: [Access2Markets](#)



Europe is among the largest consumers of saffron and related products. Today, food is the largest application segment of saffron, accounting to around 50% volume share. The market for saffron is expected to grow over the next few years on account of growing demand from the pharmaceutical sector – using saffron as natural remedy.

Main European importers are Spain, Italy, France, Sweden, Germany and Switzerland. In this respect, it is important to consider the frequent and well-established intra-European trade with the named countries being the main entry points to Europe.

# 3 Market entry

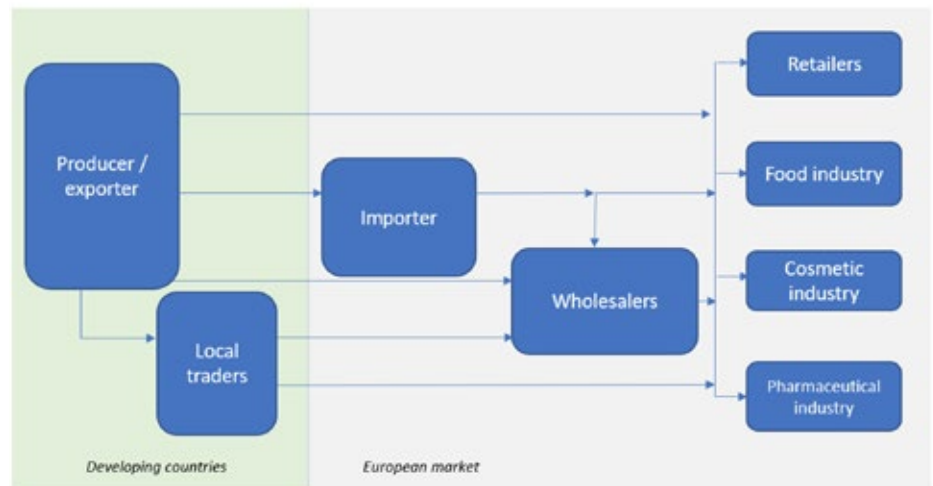
## 3.1 MARKET CHANNELS AND SEGMENTS

Saffron reaches through various options of trade channels the European market.

As mentioned before, it is important to take the re-export within Europe into consideration and focus on the main entry points in Europe. For food application, Germany, Spain and Scandinavian countries can be preferred; for pharmaceutical use, Switzerland and Italy, and regarding cosmetics, France is a main entry point.

**FIGURE 2:**  
**TRADE CHANNELS OF SAFFRON**

Source: Own illustration



There is the direct way from the producer, who also acts as exporter to the European consumer, potentially through retailers. The more diversified channels the saffron takes, the larger the number of intermediaries resulting into value distortion.

Saffron, as ingredient, is mainly exported in small-volume bulk packaging and enters the European market through importers and wholesalers. Increasingly, these prefer the direct contact with producers for transparency and clear traceability along the supply chain. In recent years, retail chain outsource the purchase to importers with specific product focus.

## 3.2 COMPETITION

In terms of pure production, Iran holds the largest share of saffron production in the global perspective. According to the FAO, Iran produces 85% of the world's saffron supply. Export numbers of other countries, such as Spain, France and Greece include not only the volume of own production, but also of re-export from other countries – complementing their volumes.

Key producers of saffron are Iran, Afghanistan, Spain, Italy, India, Greece, Morocco and Azerbaijan.

As the increasing interest on the global market for saffron puts pressure on the saffron producers, the costliest spice has to face competition also from another direction: as the spice and herbs supply chain is complex and the demand for spices and herbs is increasing, the stages along the value chain are under pressure and prone to fraud. Spices and herbs may be substitutes by other plants or artificial dyes, which have not been declared.

In case of saffron, the stigmas may be replaced by artificially dyed fibres of other origins or mainly of petals of safflower (*Carthamus tinctorius*). Saffron and safflower petals may be mistaken for each other, however, differentiate clearly in the flavour and strength of dye.

Therefore, transparency and clear traceability along the supply chain is a crucial tool to sustain quality.

#### TIPS

Non-compliance with international standards, packaging problems, mismatches with the needs of target markets, bulk export of saffron lack of specialized marketing and exporting organizations are among the main problems of saffron export of the producing countries. Therefore, it is recommended to create strong unions among producers to consolidate volumes and efforts.

Development of an USP (Unique Selling Point) – telling your story – creates interest and a bond between producer and importer/consumer.

Assure full transparency and traceability along the chain, complemented by profound documentation, implementation of international standards, etc. to avoid fraud and proof genuinity.

## 4 What trends offer opportunities?

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Increasing world interest in the use of fragrance, colour, flavour and medicinal sources with plant origin has broadened the horizon for production, use and consumption of saffron.

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 drivers for the organic market in Europe are the growing consumer concerns over food safety, the environment and human health, which are fuelling demand for organic products across Europe.

The availability of organic produced saffron has significantly germinated the application of saffron for pharmaceutical products. **Natural remedies**, particularly in countries with rapid population expansion, notice growing demand from the pharmaceutical sector.

Consumers are increasingly interested in the product – relating to all aspects along the supply chain. And with this, the awareness that 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 product and cosmetics.

Thus, also in the cosmetic context, as personal health and wellness combined with improved standards of living and the wish to **substitute chemical components** with natural ingredients, will enhance the demand for saffron in the coming years.

Growing preference of **natural products** over artificial colourings and flavourings, boosted also by the growing home-cooking trend during the Covid-19 pandemic and the globalisation of cuisines. The most expensive spice has always been a premium and luxurious spice, which remains valid also today.

# 5 What legal requirements must Saffron comply with?

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## 5.1 REQUIREMENT AS FOOD INGREDIENT

Saffron, used as food ingredient – as spice or as food colourant has to comply with different legal requirements. A full list of legal requirements applicable to saffron (HS code 091020), is provided on the platform Access2Markets. The trade assistant presents details on tariffs, taxes, including import requirements on contaminants, pesticides, documents and customs declaration.

### 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](#).

### PRODUCT SAFETY FOR FOOD PRODUCTS

When exporting food ingredients 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. For more details on the specific pesticides, the [EU pesticide database](#) provides all relevant information. A regular update is recommended, as Europe's food safety authorities amend levels on new developments of the market.

To prevent contamination of spices with insects and other microbiological contaminants, preventive measures can be considered, 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.

**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. A first amendment can be found [here](#).

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.

### COLOURING FOODS

Using saffron as food ingredient also adds colour to food. As saffron can be consumed as such, it offers additional properties and is not selectively extracted, it is referred to as colouring food.

It is important to further note, that colouring foods do not need to be designated on the label by the name of their category "colour" and an E-number<sup>1</sup>.

<sup>1</sup> E-numbers ("E" stands for "Europe") are codes for substances permitted as food additives. An E number means that an additive has passed safety tests and has been approved for use by the European Food Safety Authority (EFSA).

For more details, also on the legislation, please check the [Guidance note](#).

The key legislation in the European Union is still based on the General Food Law, and for colouring foods the Annex II to the [Regulation \(EC\) No 1333/2008](#) is to be consulted.

## ALLERGENS

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.

## LABELLING AND PACKAGING

Food placed on the EU market must meet the legislation on food labelling ([Regulation \(EC\) No 1169/2011](#)).

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**

Please note. the legal requirements present a baseline, however, countries and buyers may have specific requirements, which go beyond the legislative thresholds.

Consult with the Natural Food Colours Association for more details: [www.natcol.org](http://www.natcol.org).

Keep in mind that there is an European legislation, but also a national legislation, which might vary.

Visit [Access2Markets](#) – a portal from the EU regarding tariffs, rules of origin, requirements, customs procedures, etc.

Pay special attention to the raw material if you must purchase it from suppliers. Adulteration is a serious problem. If the strict controls in Europe uncover adulteration, it falls right back to the exporting company, which will be held liable and have to take the responsibility.

Consult with the importer regarding the specific Maximum Residue Levels (MRLs.).

Include the issue of contamination in your internal procedures, throughout the entire chain. Especially, the cultivation and storage conditions are critical stages.

Familiarise yourself with the [Regulation \(EC\) No 1756/2004](#) on plant health. Annex VI (page 170 – 171) of [Directive 2000/29/EC](#) provides an example of a phytosanitary certificate.

## 5.2 REQUIREMENT AS COSMETIC INGREDIENT

In Europe, saffron is mainly used as a spice. To a minor extent, the cosmetic industry uses saffron, for instance, for perfumes, creams and for colouring.

The INCI name could be *Crocus Sativus Flower Extract*.

Saffron can only be exported to the European cosmetics market if complying with the legal requirements for natural ingredients for cosmetics. These requirements include:

- + Relevant European cosmetics legislation ([Regulation \(EC\) No 1223/2009](#)).
- + Well-structured product (technical aspects) and company documentation to supply to your buyers.
- + Classification, Labelling and Packaging of chemicals ([CLP](#)).
- + Check if applicable: [REACH](#), a law to regulate chemical substances.
- + If applicable: Organic legislation ([Regulation \(EC\) No 834/2007](#)), [COSMOS](#) and [NaTrue](#), and other social component certifications (CSR, fair trade etc.).

**TIPS**

Note that European, as well as national regulations and respective MRLs are subject to constant change and updates. Keep track especially on allowed and prohibited substances applicable to cosmetic ingredients.

Visit [Access2Markets](#) – a portal from the EU regarding tariffs, rules of origin, requirements, customs procedures, etc.

See the CBI workbook on preparing a technical dossier for cosmetic ingredients for more information and tips.



# 6 What additional requirements may buyers have?

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Non-legal requirements reach beyond legislation, as companies can go further in their requirements than legislation.

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.

## 6.1 PRODUCT 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 an accredited by GFSI, it enjoys international trust.

## 6.2 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.

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. And the best known are fair trade labels with relevant certification schemes such as **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 the organic certification.

### 6.3 ORGANIC

Over decades, and strengthened again by the Covid-19 pandemic, the demand for organic products rose significantly.

To be granted the organic certificate, the production methods have to comply with the European legislation for organic farming and need to be at least 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.

# 7 Useful sources

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Access2Markets: <https://trade.ec.europa.eu/access-to-markets/de/statistics>

Attokaran, M. (2017): Natural Food Flavors and Colorants. Wiley-Blackwell; 2<sup>nd</sup> edition.

CBI: [www.cbi.eu/news/european-initiatives-fight-food-fraud-spices-and-herbs-sector](http://www.cbi.eu/news/european-initiatives-fight-food-fraud-spices-and-herbs-sector)

Food Navigator: [www.foodnavigator.com](http://www.foodnavigator.com)

Grand View Research: [www.grandviewresearch.com](http://www.grandviewresearch.com)

ITC Intracen: [www.trademap.org/Index.aspx](http://www.trademap.org/Index.aspx)

Hosseini, A. et altera: Saffron petal as a new pharmacological target:  
[www.ncbi.nlm.nih.gov/pmc/articles/PMC6251391/](http://www.ncbi.nlm.nih.gov/pmc/articles/PMC6251391/)

Medical News Today:  
[www.medicalnewstoday.com/articles/327017#benefits](http://www.medicalnewstoday.com/articles/327017#benefits)

MDPI Cosmetics:  
[www.researchgate.net/publication/336817839\\_Traditional\\_and\\_Modern\\_Uses\\_of\\_Saffron\\_Crocus\\_Sativus](http://www.researchgate.net/publication/336817839_Traditional_and_Modern_Uses_of_Saffron_Crocus_Sativus)

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