



# CBI Product Factsheet: Minor Oilseeds in the EU and EFTA

## 'Practical insights into your product'

This Product Factsheet covers a group of oilseeds (poppy seeds, mustard seeds, hemp seeds and pumpkin seeds) which are traded in low volumes, but at a high value in the European market. These oilseeds reach the European market through the same trade channels, and find very similar applications, mostly in the bakery and confectionery segment. The direct human consumption of these oilseeds is also increasing in Europe, driven by the health & wellness trend.

### Product definition

#### Poppy seeds

The poppy seed is an oilseed obtained from the pods of the opium poppy plant (*Papaver somniferum*). The pods contain a large amount of white, grey or bluish seeds. The poppy seed has been cultivated for over 3,000 years. Poppies grow best at cool temperatures between 10 to 15 degrees C. Today, poppy seeds are produced in various countries, mostly in Central European and Asian countries.

The tiny kidney-shaped seed is often added to foods such as breads, muffins and hamburger buns as a topping, both for its flavour and crunchy texture. Next to its use as garnish and spice, poppy seeds are also added to food for their nutritious value and low allergenic risk compared to other oilseeds. Poppy seeds can also be used as the source of poppy seed oil, as feedstuff and as a medicine. As a medicine, compared to the seed pod and straw, the seeds contain very low levels of opiates. However, as described under 'trends', there is a risk of contamination between different plant parts, posing a food safety threat.



Source: Tudnodkell

#### Mustard seeds

The mustard seed is an oilseed that exists in three different types, namely yellowish white, brown and black mustard seeds. Yellowish white mustard seeds are obtained from the white mustard plant (*Brassica hirta* / *Sinapis alba*) and are the mildest in flavour. They are used primarily in the condiment and food industries, suitable for applications such as dry milling for flour, wet milling for mustard pastes, and whole ground seed for spice mixes and meat processing. The oil content of yellow mustard seed is the lowest of the three types of mustard at approximately 27%.



Source: Artisanal Foods

Moreover, brown mustard seeds are obtained from the brown mustard plant (*Brassia juncea*) and black or 'oriental' mustard seeds are obtained from the black mustard plant (*Brassica nigra*). Brown and black mustard seeds are hot and spicy. Brown mustard seeds are commonly ground into flour which is used to produce hot mustard, used in European products. The oil content of brown mustard seed is about 36%. The black mustard seed is native to Sub-Himalayan plains of Northern India, and often used to produce spicy cooking oils. There are oriental black mustard seed varieties grown in Canada that have oil contents of up to 50%, although the average oil content is approximately 39%.

Additional to their use for flavour, mustard seeds are also known for their nutritious value, being rich in minerals, vitamins and anti-oxidants.

Mustard seeds are best cultivated under cold atmosphere and relative moist soil. Mustards are native to Anatolia. Today, however, mustard seeds are cultivated as one of the main commercial crops in Canada, India, China, and temperate climates of European region as well.

**Hemp seeds**

The hemp seed is an oilseed derived from the hemp cultivars of the Cannabis plant (*Cannabis sativa* L.). Hempseeds are commonly used as a condiment in its raw version, ground into a bakery or into milks or they are sprouted. Hemp seeds have been used as a source of food for thousands of years. Nevertheless, its cultivation and food use remain limited.



In recent years, hemp seeds have been recognised as functional foods (to stimulate health). The seed is known for its high levels of protein, its unique fatty acid profile and its dietary fibre, mineral and vitamin content. Nonetheless, it is still considered to be a niche product.

**Pumpkin seeds**

Pumpkin seeds (or 'pepitas') are edible kernels of the pumpkin fruit (*Cucurbita maxima*). The seeds are commonly used in foods for their sweet, creamy and nutty flavour as well as for their nutritious value. The seeds' use in foods is primarily as a condiment, for instance in baking and salads, and as an oil. In the latter case, oil may be produced from the naked green seed or, as a cheaper option, from the green seeds including its white shell.



Pumpkins are cultivated in different parts of the world. Today, China (specifically Inner Mongolia province) produces more pumpkin (seeds) than any other country. It is known for its high quality and organic certified production process. India, Russia, the Ukraine, Mexico, and the U.S. are also major producers of pumpkin (seeds).

**Codes for minor oilseeds:**

The products covered in this Product Fact Sheet can be found in the following Harmonised System (HS) codes:

HS code	Description
1207 5090	mustard seeds (excl. for sowing)
1207 9190	poppy seeds (excl. for sowing)
1207 9991	hemp seeds (excl. for sowing)
1207 9996	other, incl. pumpkin seeds (excl. for sowing)

## Product specification

### Quality

#### General

The quality properties of the minor oilseeds covered in this document can be differentiated according to several parameters. Quality grade specifications often include:

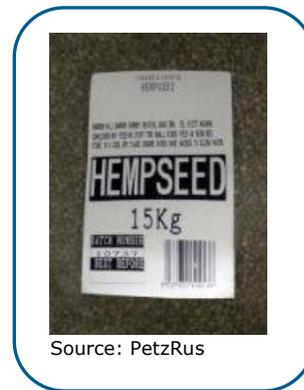
- Uniformity in size, shape and colour; different varieties should not be mixed.
- Seed conditions such as hardness, moisture content, oil content (including fatty acid composition), odour, colour and flavour.
- Cleanliness and absence of moulds, weevils, obnoxious smell, insect infestation and artificial colouring matter.
- Absence of foreign matter: dust, lumps of earth, dirt, stones, stems, straw or any other impurity and/ or any other edible/non edible seeds.

Oilseeds should be free from mycotoxins and harmful microbiological activity. Especially Aflatoxin and ochratoxin contamination are known to be a problem for many oilseed producers, and buyers closely monitor these aspects.

It is also important to prevent adulteration and contamination of seeds by foreign materials (e.g. dust) by keeping facilities and equipment clean. In addition, make sure to ensure proper storage and transportation (see 'Packaging').

#### Organic (if relevant)

- Comply with organic standards for the production of oilseeds. Refer to the section on 'Niche requirements' for further details on organic production and labelling.



Source: PetzRus

### Labelling

- Ensure traceability of individual batches.
- Use English for labelling purposes, unless your buyer has indicated otherwise.
- Labels must include the following:
  - Product name
  - Manufacturer's lot or batch code
  - Whether or not the product is destined for use in food products
  - Name and address of exporter
  - Product's country of origin
  - Shelf life: Best-before date / use-by date
  - Net weight / volume in metric units
  - Recommended storage conditions

*Organic (if relevant):* Name / code of the certifying body and certification number.

### Packaging

The minor oilseeds covered in this document are usually transported in natural bags (e.g. jute), often with an inner lining material to avoid bleeding, or paper bags.

- Ensure preservation of quality by:
  - Thoroughly cleaning and fumigating containers before loading the seeds.
  - Protecting the cargo from moisture during loading, as to avoid mould, spoilage and self-heating.



Source: IMCO Premium Ingredients

- Ensuring appropriate temperature, humidity/moisture and ventilation conditions during transportation.
- Protecting the cargo from pests such as beetles, moths, etc.

## Requirements you must meet

**Contaminants in food:** The EU has laid down maximum levels of contaminants in food, including ingredients such as oilseeds.

**CFA<sup>1</sup>:** For more information, read the CBI study on [EU legislation: Contaminants in food](#).

**Maximum Residue Levels (MRLs) of pesticides in food:** EU legislation has been laid down to regulate the presence of pesticide residues (MRLs) in food products.

**CFA:** Verify that pesticide residues remain within limits. For more information, consult the specific EU legislation: [Maximum Residue Levels \(MRLs\) of pesticides in food](#).

**Additives, enzymes and flavourings in food:** The EU has set a list of permitted flavourings and requirements for their use in foodstuffs intended for human consumption, which includes oilseeds. This is particularly relevant to food manufacturers. However, insight into this legislation can help you to understand their requirements.

**CFA:** Familiarize yourself with the concerns of the end-users of your products by checking EU legislation on [Additives, enzymes and flavourings in food](#).

**Hygiene of foodstuffs:** Food business operators shall put in place, implement and maintain a permanent procedure, or procedures, based on the HACCP (Hazard Analysis and Critical Control Points) principles. This also applies to the import of food to the EU and export from the EU.

**CFA:** Ensure compliance with EU legislation on [Hygiene of foodstuffs \(HACCP\)](#).

## Common requirements

**Food safety management:** Buyers usually require their suppliers to have a 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. In addition, suppliers who comply with these systems at a higher levels gain benefits in price and conditions.

**CFA:** Suppliers can apply a basic HACCP system. However, if they aim to supply food manufacturers more directly, it is necessary to have a certified food safety management system recognised by the Global Food Safety Initiative, such as ISO 22000, BRC or IFS. Visit the website of the [Global Food Safety Initiative](#) for more information.

## Niche requirements

**Regulation (EC) 834/2007 on organic agriculture:** The EU has established requirements on the production and labelling requirements with which an

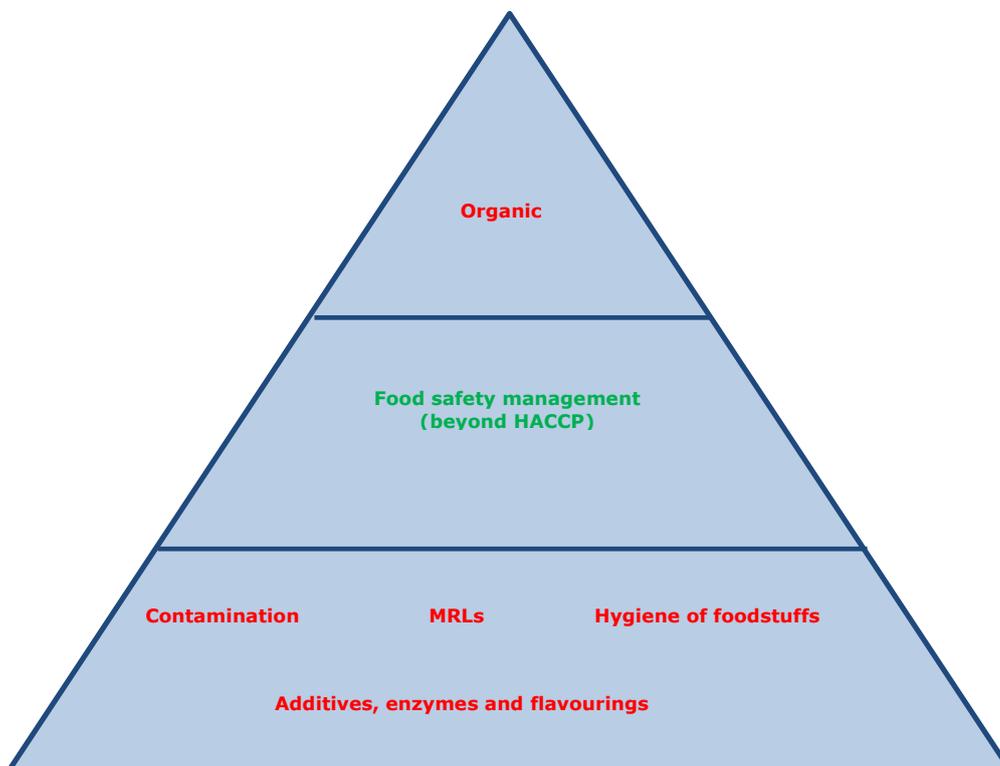
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<sup>1</sup> Consideration for action

organic product of agricultural origin must comply in order to be marketed in the EU as "organic".

**CFA:** In general, the market for organic oilseeds in Europe is still a niche segment (with an estimated market share of 3-5%), although it is growing within bakery and confectionery. If you choose to obtain a certificate for organic production, find out more about [Organic production and labelling](#).

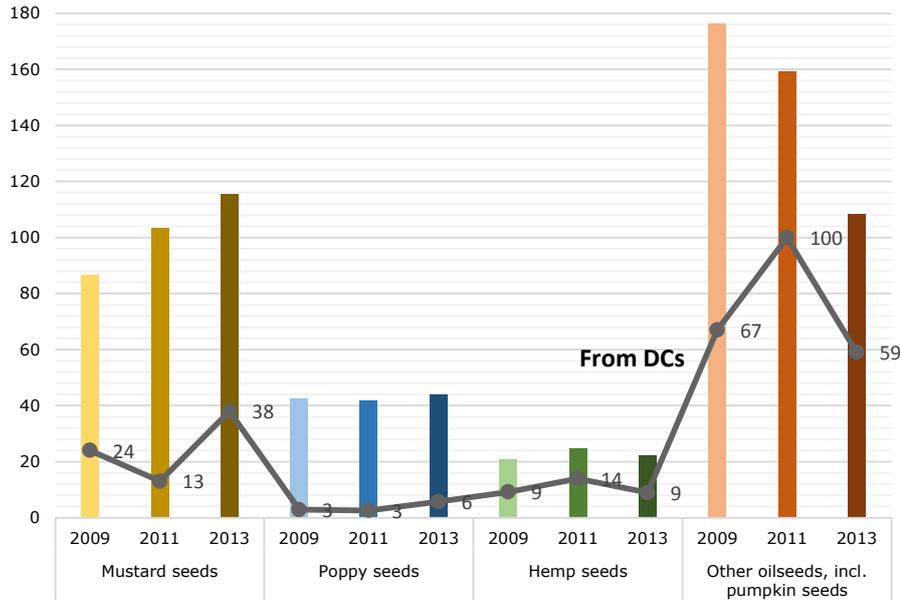
**CFA:** Make sure that your organic certification is harmonised with the [EU/EFTA legislation](#)



## Trade and Macro-economic statistics

### Imports

**Figure 1: Total imports of minor oilseeds to the EU and EFTA, including share of DCs, in 1,000 tonnes**

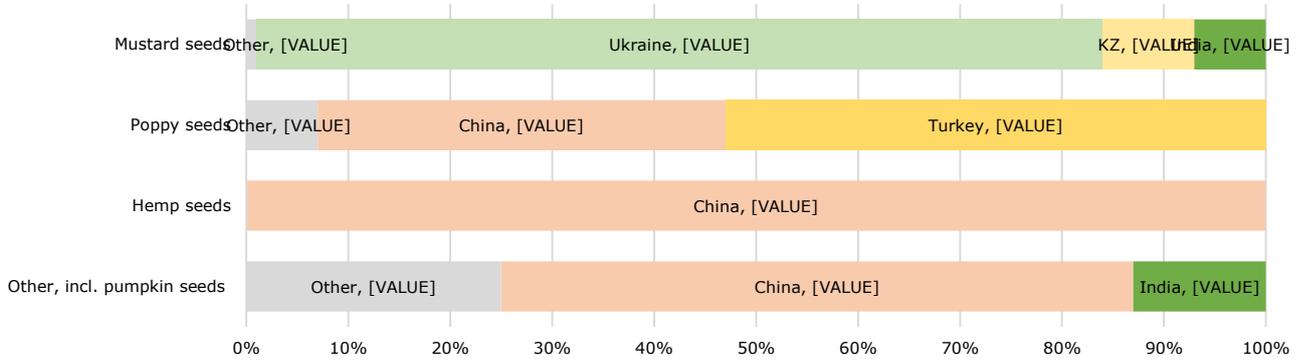


Source: Eurostat, 2014

- Total European imports of poppy, hemp and mustard seeds amounted to 182 thousand tonnes (€ 204 million) in 2013. Additionally, imports of 'other seeds' (incl. pumpkin seeds) amounted to 108 thousand tonnes (€ 192 million) in 2013.
- Over the period 2009-2013, total European imports showed a positive annual growth rate for hemp seeds, mustard seeds and poppy seeds. Especially imports of poppy seeds have increased over this period, reflected in an annual growth rate of 7.4%.
- West European countries, especially the Netherlands, Germany, Belgium, and the UK, account for the largest share of total European imports for all four oilseed categories covered in this Product Factsheet.
- These countries are important trade hubs and, in some cases, oilseed processors, which makes them key distributors of seeds to other European countries. For instance, next to being the main European importer of hemp seed in 2013, the Netherlands was also the second largest (re-)exporter of hemp seeds to other European countries in 2013. In 2013, Dutch hemp seed imports reached 6.0 thousand tonnes (€ 6.6 million), and its hemp seed (re-)exports reached 5.1 thousand tonnes (€ 7.0 million), accounting for around 30% of total European trade.

**CFA:** Accompany developments in the European trade for oilseeds and identify developments such as the emergence of new suppliers and decline of established ones. An interesting source to get acquainted with the European market and its trade dynamics is the website of the European Commission's [Export Helpdesk](#). The website of [FEDIOL](#) centralises publications addressing the oilseed sector and can be relevant to the products covered in this Product Factsheet.

**Figure 2: Imports of minor oilseeds to the EU and EFTA; imports shares of minor oilseeds to the EU and EFTA from largest DC markets (in terms of 2013 volume)**



Source: Eurostat, 2014

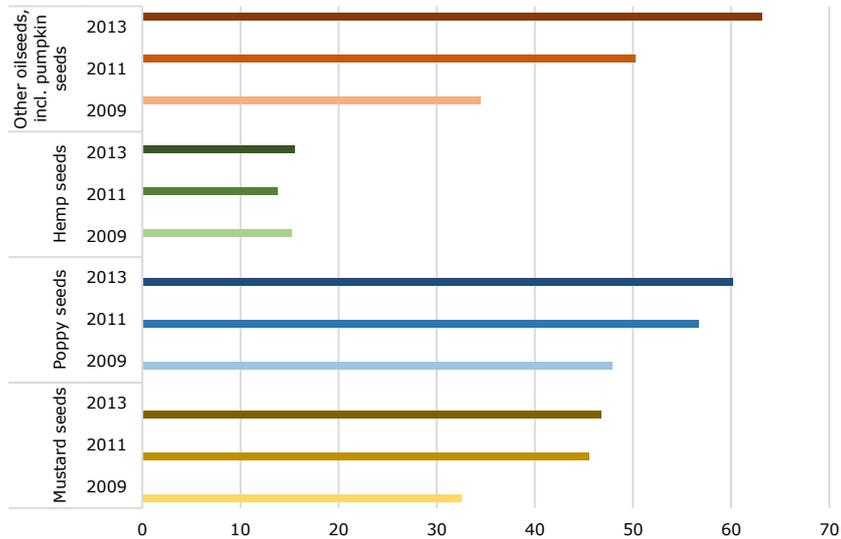
- In 2013, the largest shares of DC-sourced oilseeds were recorded for hemp seeds and the product group 'other oilseeds, including pumpkin seeds'.
- Hemp seed imports from DCs account for approximately 40% (9.0 thousand tonnes / € 7.8 million) of world supplies to EU and EFTA countries.
- 'Other seeds, including pumpkin seeds' from DCs accounted for approximately 55% (59 thousand tonnes / € 110 million) of total EU and EFTA imports in 2013.
- However, these large shares are significantly determined by Chinese supplies to Europe. In 2013, China supplied 100% of the total DC supplies of hemp seeds to the EU and EFTA, 44% of total poppy seeds and 62% of 'other oilseeds, including pumpkin seeds'.
- Ukraine dominates DC supplies of mustard seeds to the EU and EFTA, at 16 thousand tonnes (€ 11 million). Turkey is the largest DC supplier of poppy seeds to the EU and EFTA, reaching 3.0 thousand tonnes (€ 7.9 million).

**CFA:** Identify your potential competitors and learn from them in terms of:

- Marketing: website, social media, trade fair participation, etc. Well-structured websites are for example: [Earthen Delight \(India\)](#), [Dalian Spring Agricultural Products \(China\)](#), [Umalaxmi Organics \(India\)](#), [Etna \(Turkey\)](#), [Bata Food \(Turkey\)](#).
- Product characteristics: origin, quality, oil content, etc.
- Value addition: certifications, processing techniques.

## Exports

**Figure 3: Total exports of minor oilseeds from the EU and EFTA market, 2009-2013 in 1,000 tonnes.**



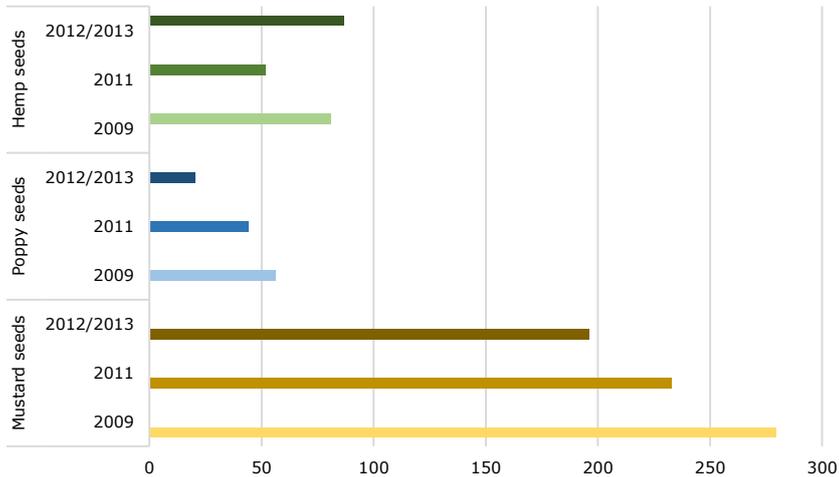
Source: Eurostat, 2014

- In 2013, total EU and EFTA exports of poppy, hemp and mustard seeds reached 122 thousand tonnes (€169 million). Exports of 'other oilseeds' (incl. pumpkin seeds) amounted to 63 thousand tonnes (€ 108 million).
- The largest European exporters of minor oilseeds are located in Western Europe. Most of the exports destinations for these oilseeds are also located within the EU, thus reflecting the high level of intra-European trade for these products.
- Germany is the main exporter of mustard seeds, accounting for a share of 46% of the total EU/EFTA exports in 2013. France is the main exporter of hemp seeds (at a share of 46% of the total EU/EFTA exports in 2013), and the Netherlands, a large exporter of all oilseeds selected (including e.g. 33% of total hemp seed exports). Whereas Germany is a large producer of mustard seeds, and France is the largest producer of hemp seeds in the EU, the Netherlands' function is limited to being a major trade hub for oilseeds.
- An important exception to the rule, the Czech Republic accounted for approximately a third (34%) of total EU and EFTA exports of poppy seeds in 2013. Czech exports amounted to 20 thousand tonnes (€44 million). The Czech Republic is also the main global producer of poppy seeds, with a long tradition in poppy seed cultivation.

**CFA:** The website of [FoodDrinkEurope](http://FoodDrinkEurope) could be an interesting source to understand consumption patterns of food products, including the use of oilseeds, across different European countries.

## Consumption

**Figure 4: Apparent consumption<sup>2</sup> of minor oilseeds in the EU, in 1,000 tonnes**



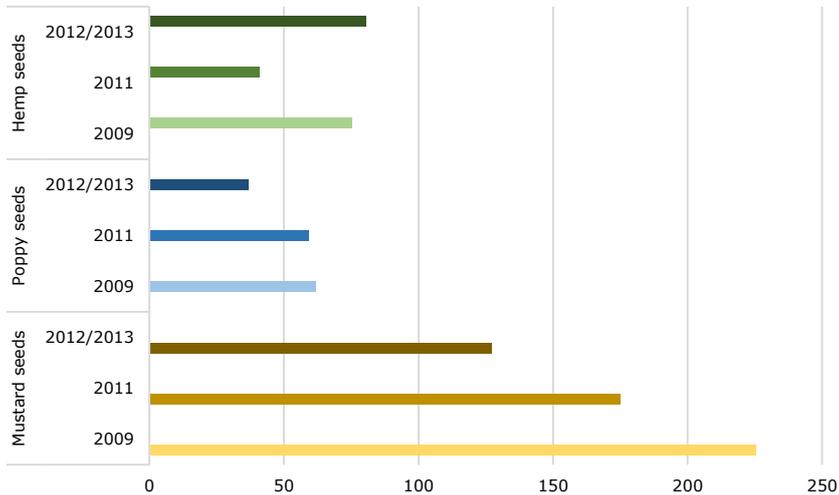
Source: FAOSTAT 2014, Eurostat 2014

- Total apparent consumption of mustard, poppy and hemp seeds in the EU and EFTA amounted to 303 thousand tonnes in 2013, having declined at an annual average rate of 7.6% since 2009.
- Mustard seeds are the most consumed oilseeds in the group of minor oilseeds (65% of total consumption), keeping in mind that apparent consumption also includes industrial demand. For this reason, the figures include mustard seeds which are used in the production of mustard in Europe (e.g. France, Germany, the Netherlands, Eastern Europe, etc.).
- Hemp seeds accounted for 29% of total apparent consumption in 2013, also including industrial demand stemming from the crushing industry (hemp seed oil). In contrast to a declining consumption of mustard seeds, hemp seed consumption increased at an annual average rate of 1.9% since 2009.
- Poppy seeds recorded the highest decline in consumption among the minor oilseeds, at an annual average rate of 22% since 2009. The market for poppy seeds has generally declined in this period due to the risk of seed contamination from other plant parts, which has enhanced food safety concerns. Poppy seeds are mostly used in bakery and confectionery in both Western and Eastern Europe.

<sup>2</sup> Apparent consumption: defined as a calculation of (imports – exports) + production.

## Production

**Figure 5: Production of minor oilseeds in the EU, in 1,000 tonnes**



Source: FAOSTAT, 2014

- Total EU and EFTA production of hemp, poppy and mustard seeds reached 166 thousand tonnes in 2012. Given the total production volume in 2008 (187 thousand tonnes), EU and EFTA production levels of these three seeds have declined over the period 2008-2012, at an annual average rate of 3.3%.
- Whereas average annual poppy seed production decreased substantially in the period 2008-2012 (at a rate of -16%), the average annual change of mustard seeds was more modest (at a rate of -2.0%), and hemp seed production increased significantly (at a rate of +8.0%).
- The main producer of poppy seeds in the EU and EFTA, as mentioned previously, is the Czech Republic, accounting for more than a third of total EU/EFTA production (13 thousand tonnes) in 2012. Nevertheless, Czech production of poppy seeds declined over the period 2008-2012, with an average annual change of -29%. This decline is linked to food safety concerns related to poppy seeds.
- The main EU/EFTA producer of hemp seed in 2012 was France. Its 2012 production volume of 78 thousand tonnes accounted for 99% of total EU/EFTA production volumes (79 thousand tonnes). A large share of French production is exported.

**CFA:** Find out more about consumption and production of oilseeds in Europe through the statistics provided by [FAOSTAT](#) and [Fediol](#) (Federation of the European Vegetable Oil and Proteinmeal Industry).

**CFA:** The websites of [Baking Europe](#) and of the [European Confederation of National Bakery and Confectionery Organisations](#) can also provide interesting information on the market for bakery and confectionery in Europe, which is the largest segment for the oilseeds covered in this Product Factsheet.

## Market trends

### **Health and Wellness**

- Increased scientific and public knowledge on the role that a healthy diet, including in terms of fatty-acid content, can play in preventing disease and promoting general health has created new opportunities for the oilseed industry in recent years.
- Natural health products and functional/convenience foods represent one of the fastest growing markets in Western Europe. Because oilseeds form an ingredient in these products [Nuts and seeds accounted for more than 37% of global snack foods launches in 2013 ([Innova Market Insights](#))], this has positively effects the demand for minor oilseeds.
- In addition, the rising number of Europeans adopting a vegetarian diet has spurred the request for more functional and high-value protein ingredients as an alternative to meat and fish, which increases the incorporation of oilseeds in products such as breads and snacks.
- In the bakery sector, there continues to be increased demand for greater variety of wholemeal breads with oats, bran and seeds. With a total consumption of bread, bagels, viennoiserie and patisserie estimated at nearly 39 million tonnes in the EU, this trend has largely affected the popularity of confectionery-grade oilseeds.
- The increased scientific and (particularly) public knowledge on the benefits of high value oilseeds and its resulting popularity has also meant that these products are now sold in mainstream supermarkets as well, as opposed to being sold mainly in health food shops – which was the case a decade ago ([Irish examiner](#), 2012).

**CFA:** Promote the various applications and health properties of the oilseeds you export. Make sure to provide your buyer with accurate product specifications and composition, with a focus on:

- Product description and code
- Origin
- Certificate(s) [if applicable]
- Production: ingredients, additives, process
- Sensorial properties: smell, colour, taste, appearance
- Packing: net content, kind of packaging, size, layers
- Shelf life
- Nutritional values
- Analytical properties
- Microbiological properties
- Allergy list

**CFA:** Make sure your product characteristics and quality match your target market and end-user in terms of:

- o Taste and odour
- o Purity level & uniformity

**CFA:** Stay informed on the news for Supplements and Nutrition trends in the EU market by visiting the [Nutraingredients](#) website.

### **Oilseeds and the food safety debate**

- Scientists have recently warned for potentially hazardous levels of morphine in poppy seeds used in UK bakery products. The UK Food Standards Agency (FSA) said 'morphine-like' effects were observed in some consumers after they had eaten poppy seeds ([International Business Times](#), 2014).
- Poppy seed exporters supplying the EU food market must be aware of the risk of morphine contamination during cultivation, harvesting and processing. The potential of hazardous quantities of morphine in food

products containing poppy seeds, such as the recently researched for the UK’s bakery sector, can seriously jeopardize an exporter’s reputation. It should thus be considered as an essential factor in handling.

- Poppy seeds do not contain the opium alkaloids (which cause the morphine effect) but they can become contaminated with alkaloids as a result of poor harvest and post-harvest practices.

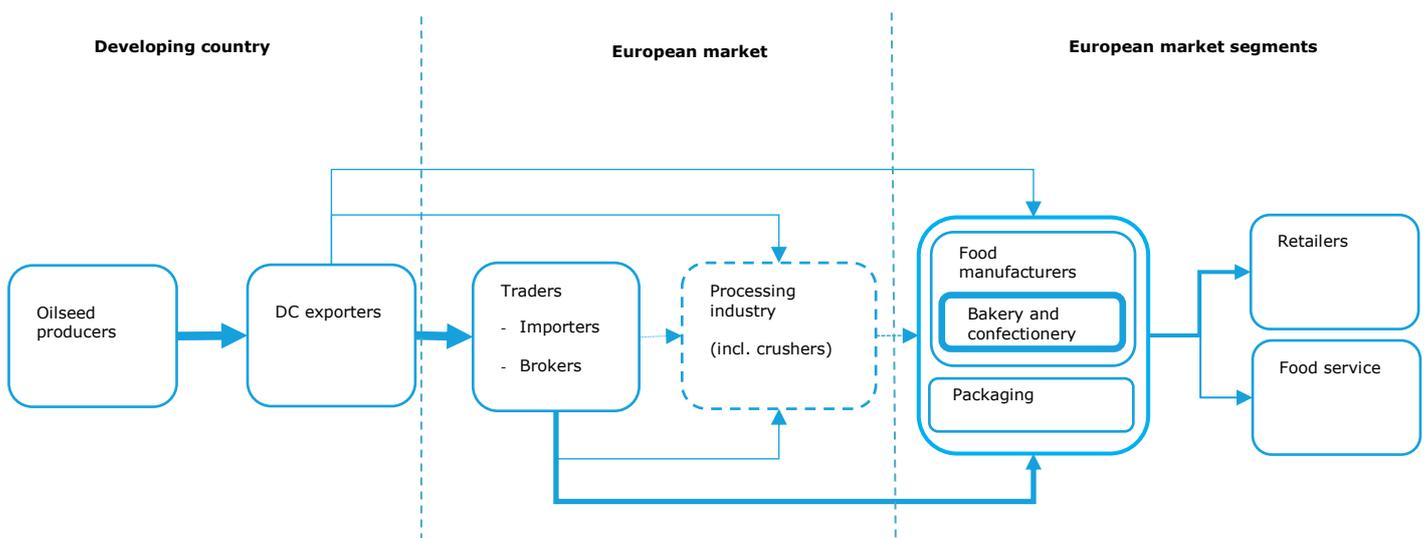
**CFA:** Currently, there is no EU regulation on morphine content in poppy seeds used in food. Yet, as the discovery of morphine contamination can harm an exporter’s reputation, producers / exporters are advised to invest in improving their harvest and post-harvest handling of poppy seeds to avoid contamination. To reduce the presence of morphine in poppy seeds and increase the seed’s quality, the [Food Standards Agency \(FSA\)](#) has issued a set of codes regarding washing, soaking and heat treatment of the poppy seeds ([Bakery Info](#), 2014).

- Similar to poppy seed contamination, hemp seeds may be contaminated during maturation, harvesting and processing, causing high levels of tetrahydrocannabinol (THC). This occurs when the hemp seed’s hull directly contacts the cannabinoid-containing resins in bracts.
- In the 2009, the EU developed a regulation for hemp food, which indicates that the maximum content of THC allowed in hemp plants must be lower than 0.2%. However, the enforcement of food law is nation-specific and might be stricter.

**CFA:** Regardless of the divergence in law enforcement across the EU, exporters are advised to invest in production and processing practices that reduce THC contamination of the hemp seed to a minimum. Exporters must consider investing in proper post-harvest practices, especially during the cleaning of the seeds, so as to guarantee that the seeds are not contaminated by other parts of the plant during handling.

## Market channels and segments

**Figure 6: Trade channels for minor oilseeds in the EU and EFTA**



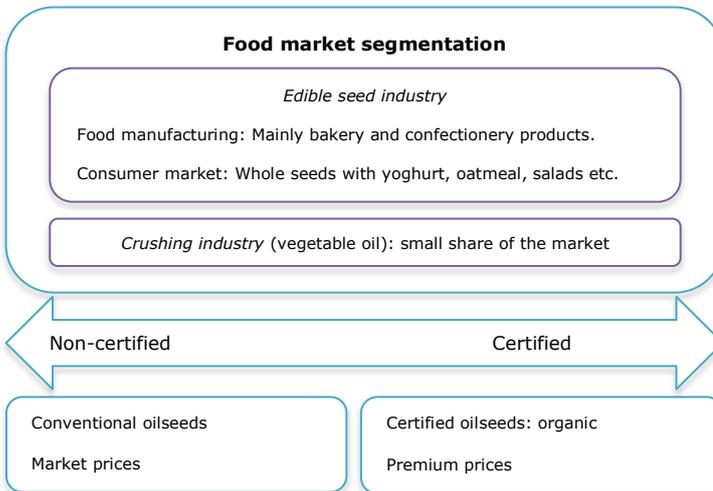
The European market for minor oilseeds can be segmented based on their end-use within the food sector.

- The **edible seed industry** can be divided into having two different segments:
  - 1) *food processing*: The bakery and confectionery industry, as highlighted under 'Trends', is by far the largest market segment for the oilseeds covered in this Product Factsheet. A very small share of minor oilseeds is used in other processed food products, with the exception of mustard seeds (i.e. in mustard manufacturing).
  - 2) *consumer market (packaging)*: it is direct consumption of oilseeds, mainly for health purposes. Oilseeds are sold whole or broken / ground to consumers, to be sprinkled over foods such as yoghurts, oatmeal and salads. This segment is growing in importance, as the availability of minor oilseeds at supermarkets is increasing.
- The **crushing industry** relates to the production of vegetable oil (and oilseed cake as a by-product). For minor oilseeds, this segment is not significant. The crushing industry requires volumes and (low) prices which are beyond the scale of these products. An exception is hemp seeds: around 15% of the hemp seed production is crushed into oil – which is still a small share when compared to the 80-95% of sunflower seeds crushed into oil.

The minor oilseeds covered in this Product Factsheet are essentially speciality products, commanding a market which requires high quality. Within the bakery and confectionery segment (as well as for direct consumption), the physical characteristics of the high value oilseed, such as uniformity in colour, shape (whole seeds) and a very high purity level, are the most important requirements.

The oilseeds can be further segmented into: non-certified high quality seeds and certified high quality seeds.

**Figure 7: Food industry: segmentation of minor oilseeds**



**CFA:** Traders are the most suitable entry point for minor oilseeds into the European market, since the exported volumes are generally small and are directed to a specific (niche) market. Traders provide their customers with a mix of products and are able to create scale by sourcing from different origins.

**CFA:** When approaching a trader, make sure to provide them with the appropriate product documentation (composition and properties, as described under CFA in Market Trends: Health & Wellness) and be realistic about the volumes you can deliver.

### Interesting Sources

- The EU Vegetable Oil and Protein meal Industry - [www.fediol.eu](http://www.fediol.eu)
- The Food and Agriculture Organisation of the United Nations has a variety of agricultural databases - [faostat3.fao.org](http://faostat3.fao.org)
- For information on the latest market developments in the Oils and seeds sector, visit The Public Ledger - [publicledger.agra-net.com/oils](http://publicledger.agra-net.com/oils)
- B2B marketplace - [europe.qo4worldbusiness.com/Seeds](http://europe.qo4worldbusiness.com/Seeds)

This survey was compiled for CBI by ProFound – Advisers In Development  
in collaboration with CBI expert Jim Fitzpatrick

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