

## BUSINESS PLAN

### CEN/TC 307

#### Oilseeds, vegetable and animal fats and their by-products – Method of sampling and analysis

### EXECUTIVE SUMMARY

#### **Business Environment**

- European Union is one of the major actors in the fats and oils sectors. The EU produced, in 2017, 24 millions tons on the 577 million tons of oilseeds produced in the world. Main productions in Europa are Soybeans, Rapeseeds and Sunflower. The major producers of oilseeds are China, India, Canada, USA, Brasil, Argentine and European Union. Soybeans represent 57 % of the total world production. EU is the fourth producer of vegetable oils after Indonesia, Malesia and China. European imports of vegetable oils amounted to 5.6 million tonnes in 2014. Palm oil makes up the majority of the vegetable oils imported into Europe. EU was in 2011 the fourth producer in oilseed meals, just behind Argentina with 28,6 million tons of oilseed meals. About two-thirds of the oilseeds consumed in the EU each year are produced in the EU but the EU imports about half the oilseed meals used annually in animal feed.
- Within all the range of products for human food, animal feeding, or industrial use, quality, chemical composition and sanitary characteristics of these products must be assessed at each step of the transformation chains. Confidence in the results of analysis is the basis for a fair trade between stakeholders and for optimal utilisation of oilseeds, vegetable fats and oils and their by-products.
- Parties involved:
  - Producers of oilseeds
  - Producers of oilseeds meals and oils
  - Users of oilseeds meals (for exemple animal feeding stuffs),
  - Users of vegetables and animal fats and oils (exept milk products),
  - Analysis laboratories (private and public),
  - Public authorities
  - ...

#### **Benefits**

The harmonisation of a collection a standards from international (ISO) to European Union (CEN). These methods are recognised and accepted by all the stakeholders and contribute to facilitate the commercial exchanges within the members community. Moreover, the implementation of ISO standards allowed European partners of the field of activities to be perfectly integrated to the global market.

Since its creation, CEN/TC 307 adopted 70 ISO standards and 10 EN standards have been created in the frame of biodiesel development.

#### **Priorities**

To make European standards available related to:

- a highest harmonisation of practices and methods between EU members and for their integration on the international trade markets.
- the development of a food and feed security and to the development of biofuels.

## **1 BUSINESS ENVIRONMENT OF THE CEN/TC**

### **1.1 Description of the Business Environment**

The following political, economic, technical, regulatory, legal, societal and/or international dynamics describe the business environment of the industry sector, products, materials, disciplines or practices related to the scope of this CEN/TC, and they may significantly influence how the relevant standards development processes are conducted and the content of the resulting standards:

- **Categories of relevant stakeholders**

The industry of fat and oil sector is quite concentrated. Four international companies represent about 60% of the European turnover. Some national companies share the rest of the market. The fat and oil sector include the production of oilseeds, oilseeds meals, raw or refined vegetable oils, animale fats (except milk products), margarin and the produts derived of fatty acids.

The 3 mains productions derived from oilseeds are the human food (with lipids and proteins), the feed (with oilseeds meals and lipids), and the non food applications.

Non-food application are ultimately an increasingly important part of the use of vegetable oils and their derivatives. Here are some examples of uses :

- fuels,
- lubricants,
- solvents,
- paints, varnishes and inks,
- coatings such as linoleum,
- cosmetics,
- detergents and detergents,
- plastics.

Interested parties in cooperation with CEN/TC 307: FOSFA (the International Federation of Oil Seeds and Fats Association Ltd), AOCS, AOAC International, and EFPR (Europe's leading authority on the use, value and bio-security of edible animal fats and meat industry by-products).

Interested party concerning biodiesels: the EBB (European Biodiesel Boeard) and the NTB Network (Non Technical Barriers to the development of liquid biofuels).

- **Technical factors**

Evolution from classic standardised analysis methods to new types of methods, more rapid and more accurate, methods more respectful for the environment (alternatives to solvents, acids, reductions contaminants...).

CEN/TC 307 is the dedicated place to direct works encouraging such new methods to widespread in EU.

- **Economical & environmental factors**

As described below with the quantitative indicators, the sector is directly influenced by the EU Agricultural policy. Indeed, the raw material is produced by farms that should respect some conditions in terms of surfaces or quotas and may receive some subsidies for their production.

Since the beginning of the century, the policy related to oleaginous seeds production has undergone two main changes, the harmonisation of level of subsidies between cereals and oilseeds (year 2002 & following)

and the end of the direct link between the production and the subsidies (2006). These elements are one of the factors explaining the variations observed in terms of sowed surfaces or production.

Another evolution in the Common Agricultural Policy appeared in 2004 with the support of 45€ by hectare for the "energetical cultures". Oilseeds are directly affected seeing that biofuels and more specifically biodiesel is produced from it (rapeseed mainly in EU).

To confirm the above paragraph, the production of oilseeds has a second market after food and feeding stuffs, its evolution is now bounded to EU policy toward sustainable development and more pragmatically to the energy sovereignty.

CEN/TC 307 was mandated by the European Commission in 1997 to elaborate standards concerning minimum requirement specifications including test methods for fatty acid methyl ester (FAME) as fuel (mandate M/245). CEN/TC 307 wrote for that occasion ten standards in 2003, and few of them are currently under review.

In Europa, where biodiesel essentially comes from the cultivation of rapeseed, this outlet allows the simultaneous production of vegetable protein for animal feed. So the development of European biodiesels has allowed the increase of the production of vegetable proteins that replaced a part of the soybean imports.

European Regulation on biofuels have been put in place since 2003 to meet to a triple objective: reduction of gas emissions, reducing energy dependence, and support agricultural production. This regulation has been reinforced in 2009 in the context of the Energy Package by the introduction by the Renewable Energy Directive of a mandatory target for the incorporation of 10% renewable energy into fuels by 2020. This legislation supplemented by a fuel quality directives that imposes a reduction of 6 % by 2020 of the footprintcarbon fuels. The Renewable Energy Directive is currently beeing discussed at European Commission level and the new Regulation could limits the amont of conventional biofuels in transport to a maximum of 7% in 2021 and 3.8% in 2030, compared with 10% today. At the same time, it also sets the obligation to increase the share of other so-called "advanced" fuels in transport to 6.8%. These advenced biofuels are not issued of oilseeds.

In order to create synergies between CEN technical committees, CEN/TC 307 and CEN/TC 19 decided to share the work on this revision programme and both structures agreed to the creation in 2006 of a Joint Working Group to bring together the expertise on fuel specification and on fatty acid test methods. In 2016, the enforcement of CEN/TC 19/JWG1 has been confirmed by decision CEN/BT 13/2016.

From the oilseeds we obtain simultaneously the oil and the co-product, called "meal". Rich in protein, meals are used in animal feeding stuffs. Today, the European Union is dependent of the importations for these protein inputs for animal feed. The production of oilseeds in Europe is therefore highly dependant of the balance between the needs of oils and proteins.

## **1.2 Quantitative Indicators of the Business Environment**

The following list of quantitative indicators describes the business environment in order to provide adequate information to support actions of the CEN /TC :

### **Market situation (according to : "Statistiques des oléagineux et protéagineux, huiles et proteines végétales. 2014-2015 – Terres OléoPro. Paris)**

- Surface areas devoted to oilseed crops within Europe.

The political frame influence:

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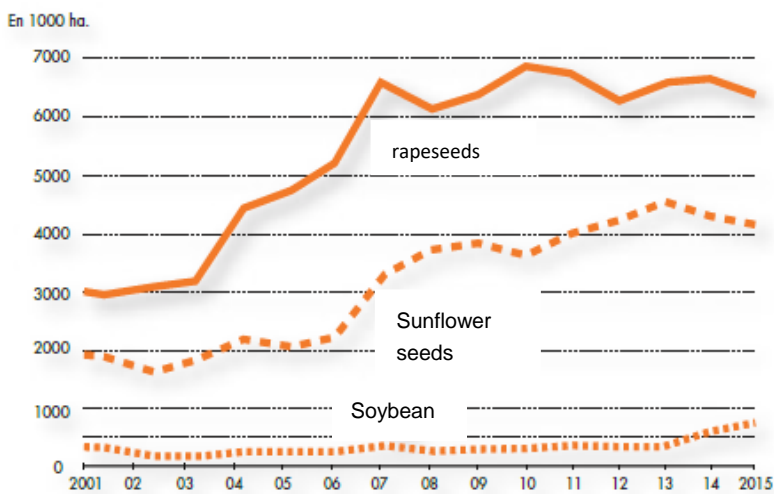
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Between 1980 and 1990, the surface areas devoted to oilseeds crops within Europe has tripled from 1,7 million hectares (ha) in 1980 to 5,7 million ha in 1990. In the 1990's, due to regulation changes, the surfaces were stabilised between 5,4 & 5,7 million ha. Then a decrease appeared in the framework of Agenda 2000. The entering in 2007 in European Union (EU) of 10 new Member States allowed a growth of the total surfaces of oilseeds crops by 33% (+5% soybean, +25% sunflower, +40% rapeseed).

In 2011, 11,0 million hectares (ha) of oilseeds were cultivated within the EU (27), of which 6,7 million ha (61 %), 4,0 million ha (36 %) and 394 000 ha (4 %) were respectively, rapeseed, sunflower seeds and soybean. Compared to the last 5 previous years, the surfaces of production of rapeseed and sunflower in UE have increased. The surfaces of production of soybean remain stable.

Between 2011 and 2015 these data have remained stable : In 2015, 11,3 million hectares (ha) of oilseeds were cultivated within the EU (28).



The regional opportunities within the EU range of agronomical characteristics:

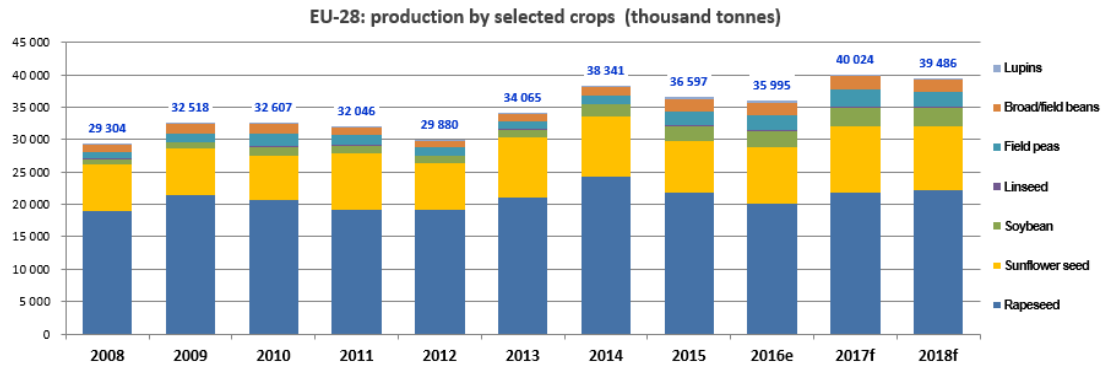
- The three European countries with the highest oilseeds surfaces are France, Roumany and Germany
- Soybean is cultivated in Italy, Romania, Austria and in France;
- Rapeseed is especially cultivated in France (1483 000 ha), Germany (1288 000 ha) and Poland (930 000 ha).
- Sunflower seeds are majoritary cultivated In Roumania (975 000 ha), Bulgaria (745 000 ha) and Spain (744 00 ha).

A change toward industrial and energetical uses of oilseeds crops:

- In 2005, the industrial use oilseed cultivation is increasing in response of the market needs in biofuels : 383 000 ha within the EU in 1997, 1,2 million ha in 2007 (i.e. 17 % of the total surface area in oilseeds), of which 95 % of rapeseed, (26 % of the total rapeseed surface area) and 5 % of sunflower seeds (3 % of the sunflower seeds surface area).
- Manufacturers are currently developing new products issued from vegetal oils (paints, adhesive agents..) that could have an influence in the future on the oilseeds needs.

- Oilseed production within EU (28)

Resulting from the spectacular development in the surface areas and from the progression in average yields, the European production has thus gone from 3 million tons in 1980 to over 16 million tons in 1999. The Agenda 2000 was followed by a decrease of the production until 2004 with the entering of 12 new Members in EU : 32 million tons in 2011.



Source : EU Oilseeds and protein crops production, area and yield (EU Crops Market Observatory - Oilseeds and protein crops)

- Oilseed exchange within EU (28)

The improvement of the self-supply of the EU in oilseeds is following the trend observed at the end of the last millennium. Indeed, UE (27) reaches a bit more than 64% of self-supply in 2010 in its consumption of oilseeds.

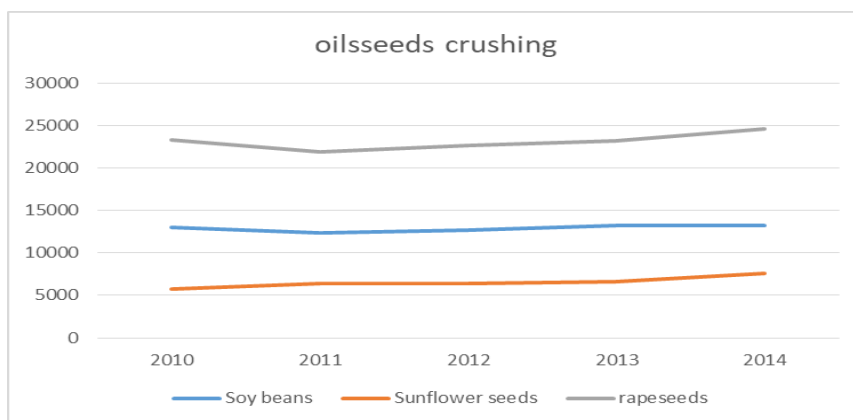
Soybean is the main imported oilseed and it represents by its own 80% of the imports of the UE (28) in 2015. Rapeseed is counting for 19% of the imports of UE (27) in the same year.

Rapeseed is the most exchanged oilseed within Member States, it weights for 62% of the total exchanges.

- Oilseed crushing

Between 2009 and 2013 the oilseed crushing in EU was constant (between 41 and 42 million tons). Over a quarter of Community crushing is carried out in Germany, 13% in France and 6% in the Nederland's and Spain.

The portion of rapeseed and sunflower seeds in Community crushing has considerably progressed and represents 70% of the crushed volumes within EU. In 2006, this portion was about 53% and in 1999, it was about 43%.



- Production of raw vegetable oils in EU (28)

In 2011, the production was 14 million tons. This production is constant since 2009.

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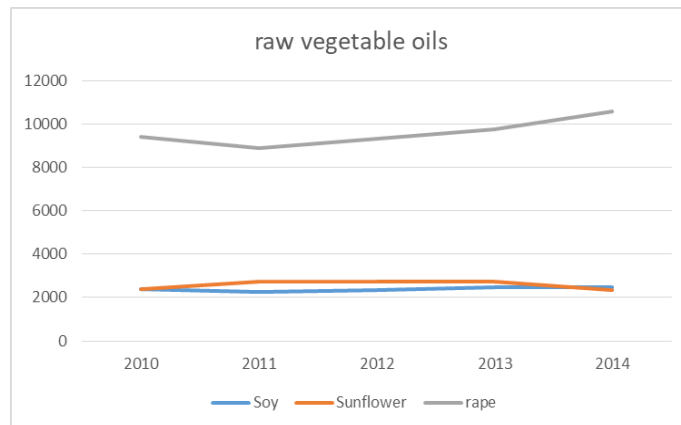
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Since 1988, rapeseed oil has become the leading oil produced within EU. Between 2004 and 2010 the production of rapeseed oil has significantly increased with almost 64% of the total production in 2010. Between 2010 and 2011 the production of rapeseed oil has decreased and after 2011 the production has slightly increased. The production of Soybean oil and Sunflower oil is more or less equal (15% for soybean oil and 18% for Sunflower oil).

Hence, rapeseed, soybean and sunflower seeds stand for the quasi totality of the EU production of vegetable oils.



- Consumption of vegetable oils

Since 2001, the EU consumption of vegetable oils has almost doubled.

This rise is mainly due to the increased use of rapeseed oils. Since 1995, rapeseed oil is the leading consumed oil within the EU with, in 2014, 10 millions tonnes consumed (31% of the total consumption before soybean oil and sunflower). Meanwhile, Germany has reduced its use of soybean oil from 3,3 millions tonnes in 2001 to 0,3 millions tonnes in 2011 and the using up of sunflower seed oil in EU has almost doubled.

In 2011, rapeseed, sunflower and soybean oils represented 69% of the total vegetable oil consumption of the EU, imported solid fats (palm oil) mainly made up the remaining 22%.

- European production and consumption of olive oil

### Data from International Olive Oil Council (IOC)

Average olive oil production in the EU in recent years (until 2016) has been between 1,4 and 2,4 million tonnes, representing around 73 % of world production. Spain, Italy and Greece account for about 97% of EU olive oil production, with Spain producing approximately 62% of this amount.

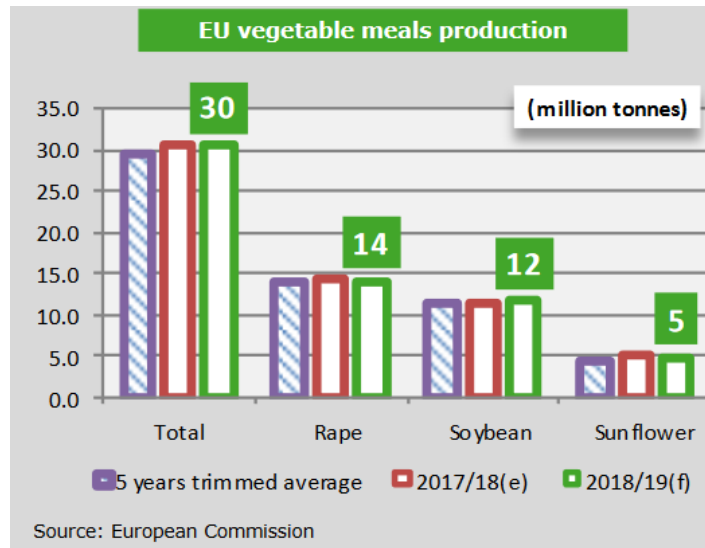
The total consumption of olive oil in EU in 2017 was about 1,5 million tons.

- European production of oilseeds meals

Between the end of the 1990's and 2004, the EU oilseed meal production was in the order of 20 to 22 million tons. Since 2004, the EU oilseed meals production has slightly increased until 26,2 millions tons in 2010. A slight decrease is observed in 2011 (25,7 millions tons). In 2014 the EU oilseed meal production was of 27 millions tons.

The soybean meals were prevailing in the past but the soybean meal production has diminished from 78% in 1981 to 52% in 2004. Today the prevailing production is the production of rapeseed meal (47% of rapeseed meal and 39% of soybean meal in 2017).

Germany is by far the leading European producer of oilseed meal.



- Consumption of oilseeds meals

The soybean oilseed meals have the biggest portion of the total consumption: it represents almost 59% of it in 2011 but is falling (it was of 70% in 2001). Rapeseed is in second position with 23% of the total consumption (but is increasing). Sunflower is fairly stable since 1993 (between 12% and 9 % of the consumption).

The highest consumer of cattle cake within EU is Germany with 8,2 million tons of oilseeds residues consumed. France is following Germany with a consumption of 4,4 million tons of oilseeds residues in 2014.

The consumption of oilseed meal has strongly increased between 2001 and 2009 (from 40 to 50 million tons) and is currently stable (about 49,9 millions tonnes in 2011)

- Animal fats – EU (28) production

**Data from the European Fats Processors and Renderers Association (EFPPA).**

BSE crisis in EU during years 1996-2002 had created a paramount industrial reorganization of rendering and melting activities.

Some units had been dedicated to process specific type of materials (id est: only poultry or only pork) in order to prevent cross contaminations and so to access particular markets (petfood, feed...) and get a better income thanks to a secure traceability all along the process.

Rendered animal fats produced in the EU are divided into 3 categories as defined in the Animal By Products Regulation 1069/2009 :

- Category 1 (cat 1) material has the highest risk of spreading disease such as BSE and includes the bovine spinal cord, pet animals, zoo and circus animals, wild animals suspected of carrying a

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disease, and catering waste from international transport. Cat 1 material needs to be disposed of, either by incineration or as a fuel for combustion. If treated correctly, it can be landfilled.

- Category 2 (cat 2) material is also high risk material including fallen stock, manure and digestive content. Cat 2 is also the default status of any material that does not fall into cat 1 or 3. In addition to the cat 1 fates, cat 2 material may also be used as organic fertiliser and soil improvers and be composted or anaerobically digested.
- Category 3 (cat 3) material is the lowest risk material. It represents parts of the animals that have been passed as fit for human consumption. However, it is generally not used for human food, either because it is made out of non edible parts (e.g. hides, hair, feathers, bones) or for commercial reasons. This category of animal fats can also be used for the manufacture of oleochemicals (e.g. soaps, cosmetics, solvents, lubricants), pet food and animal feeds, although there are further restrictions on exactly what can be fed to different types of animals.

The biggest markets for animal fats are :

- Animal feeds,
- Oleochemical,
- Biodiésel.

In 2006, EU renderers and melters have produced 2,5 millions tons of animal fats.

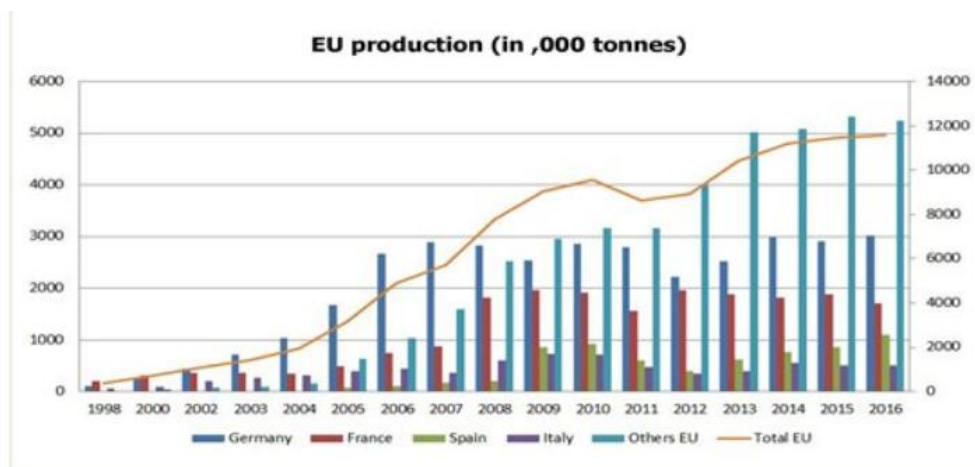
Generally speaking use of animal fats as energy meets a stronger interest, thanks to the fact it burns without emitting polluting agents like sulphur, it does not contribute to the global warming as it reduces the uses of mineral oil and also as it is a renewable energy.

In 2016 the evolutions of the market was :

- Big markets: feed (stable), oleochemistry (19% down),
- Medium markets: Biodiesel (stable), petfood (6% up),
- Small markets: food (31% down), fish feed (72% down), fur feed (230% up).

- Production of biofuels

Biodiesel has been produced on an industrial scale in the European Union since 1992, largely in response to positive signals from the EU institutions. Today, there are approximately 120 plants in the EU having produced 11,5 million tonnes of biodiesel in 2016. In 2016 the production was stable compared to 2015. (EBB Statistics).



Specific legislation to promote and regulate the use of biodiesel is in force in various countries including Austria, France, Germany, Italy and Sweden.



The EU has also published strict guidelines in compliance with CEN Standardisation in order to insure quality and performance.

EU Related legislations:

- [Renewable Energy Directive \(2009/28/EC\)](#)
- [Fuel Quality Directive \(2009/30/EC\)](#)
- [Directive to reduce indirect land use change for biofuels and bioliquids \(\(EU\)2015/1513\)](#)

## **2 BENEFITS EXPECTED FROM THE WORK OF THE CEN/TC**

A body of common standards to settle on methods of sampling and analysis for oilseeds, vegetable & animal fats and oils and their by products to determine their characteristics, accepted by every stakeholder of the sector, will contribute to rub out «technical trade barriers» and make the trade exchanges easier within the European Community.

The development of these documents within CEN, structure recognized by all partners as neutral and impartial, will ensure their implementation in each of the 34 country Member of the CEN and by every partner within the oilseed, oilseed residues and fats and oils network.

The harmonisation within the Members states of a collection of standards from international (ISO) makes them recognised and accepted by all the stakeholders and contributes to facilitate the commercial exchanges within the members community. Moreover, the implementation of ISO standards allowed European partners in the field of oilseeds, fats and oils and oilseed residues to be perfectly integrated to the global market.

Since its creation, CEN/TC 307 adopted 77 ISO standards and 10 EN standards have been created in 2003 in the frame of biodiesel development.

One example of benefit in terms of Food and Feed Safety is the implementation of EN ISO 15302:2007 "Animal and vegetable fats and oils - Determination of benzo[a]pyrene content - Reverse-phase high-performance liquid chromatography method" that helps to fulfil the requirements described in Commission Regulation (EC) No 208/2005 of 4 February 2005 and Commission Directive 2005/10/EC of 4 February 2005.

Moreover CEN/TC 307 standards can permit the control of the quality of oil. For exemple for check authenticity of an oil (and more specifically purity of olive oil but not only), several EN standards can usually used in parallel :

- EN ISO 12966 (4 parts) Animal and vegetable fats and oils - Gas chromatography of fatty acid methyl esters
- EN ISO 12228 (2 parts) Determination of individual and total sterols contents - Gas chromatographic method
- EN ISO 9936 Animal and vegetable fats and oils - Determination of tocopherol and tocotrienol contents by high-performance liquid chromatography

From a more technical point of view (with economical consequences), a better description of analytical methods given in Standards and validation of them through ring tests will improve the reproducibility of the results. This will contribute to prevent disputes between buyer and seller laboratories.

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Moreover, the choice of analysis methods is not always "neutral" from an economical point of view: promoting such criteria or such method for analysing a given criteria could sometimes lead to favour a product against another or a classification grid regarding another.

Analytical methods correctly specified in Standards may become tools for European actors to promote their products and improve their world market share.

### **3 PARTICIPATION IN THE CEN/TC**

All the CEN national members are entitled to nominate delegates to CEN Technical Committees and experts to Working Groups, ensuring a balance of all interested parties. Participation as observers of recognized European or international organizations is also possible under certain conditions. To participate in the activities of this CEN/TC, please contact the national standards organization in your country.

### **4 OBJECTIVES OF THE CEN/TC AND STRATEGIES FOR THEIR ACHIEVEMENT**

#### **4.1 Defined objectives of the CEN/TC**

**Objectives:** Standardization of methods of sampling and analysis in the fields of oilseeds, vegetable and animal fats and oils and their by-products. This includes physical, physical-chemical and biochemical methods.

The main aim is to harmonise European methods with international methods issued from ISO.

The joint working group between CEN/TC 307 and CEN/TC 19 permit also to bring together the expertise on fuel specification and on fatty acid test methods and to develop standards matching needs of oilseeds and oils sector and fuel sector.

#### **4.2 Identified strategies to achieve the CEN/TC.s defined objectives.**

Priority is given to the adoption of ISO methods<sup>1</sup> (Vienna Agreement or adoption after the ISO publication).

The other objectifs are

- If needed, elaboration of 100% European methods in order to meet specific needs of the European market,
- Maintain of the Joint Working Group with CEN/TC 19 to deal with the works allocated for the Mandate on "Biodiesel".
- Follow up of works of CEN/TC 275 dealing with horizontal methods in food analysis, in particular works on Genetically Modified Organisms, oils or oilseeds.
- Follow up of the projects of CEN/TC 327 dealing with glucosinolates, gossypol and mineral oil.
- Bring fat and oil sector expertise in CEN/BT/FACG on authenticity.

#### **4.3 Environmental aspects**

CEN/TC 307 is concerned on Environmental aspects and especially on the treatment of the waste issued of reactifs. Environmental aspects are considered for each NWIP and comments of CEN/TC 307 members on Environmental aspects are taking into account during the development of the projects.

The evolution from classic standardised analysis methods to new types of methods more respectful for the environment (alternatives to solvents, acids, reductions contaminants...) is an important issue for CEN/TC 307 members.

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<sup>1</sup> Methods from ISO/TC34/SC 2 (Oilseeds) and ISO/TC34/SC 11 (Animal and vegetable fats and oils)

## **5 FACTORS AFFECTING COMPLETION AND IMPLEMENTATION OF THE CEN/TC WORK PROGRAMME**

The main factor affecting completion of the work program are :

1° lack of available resources i.e. oilseeds and oils experts to draft and study the documents and to attend meetings.

2° Difficulties in finding laboratories willing to participate in interlaboratory trials in order to validate test methods that are studied (lack of experts, time and funds).

→ Such availability issues could be solved by explaining the benefits of participants in European standardisation and the potential dangers/disadvantages of non-participation. For urgent need of research in support of standardization a solution could be to answer Dedicated Calls from the EC.

3° Unavailability of reference materials is another pitfall as it is sometimes tricky to find for laboratories.