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THE OLIVE OIL MARKET IN THE MEDITERRANEAN: WHAT ARE MARKETING STRATEGIES FOR ALGERIA?

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SUMMARY

This article presents trends in olive oil consumption in the Mediterranean countries. The objective is to observe changes in the production and consumption of olive oil around the world, with a focus on a few Mediterranean countries, particularly Algeria. The analytical and synthetic study allowed us to examine the consumers' attitudes towards olive oil in the countries considered (price, frequency of consumption and type of product). In Algeria, for example, 72.6% of consumers believe oils, and especially olive oil, among very expensive foods; Olive oil ranks 28th among the daily food preferences and preferences of most Algerian consumers (0.25%). An Algerian consumes in general 4g of olive oil per day. Finally, the comparative study allows us to position the model of Algerian consumption of olive oil in the Mediterranean and we propose some marketing strategies which can be adopted in order to increase the consumption and develop the sector of olive oil in Algeria.

Key words: *food consumption, olive oil, trends, behaviors, Mediterranean*

Abbreviations: DEPF - Department of Studies and Financial Forecasts; DZD - dinars; EU - European Union; FAO - Food and Agriculture Organization; ONFAA - National Observatory of Agricultural and Agrifood Sectors; IOC - International Olive Council; ITAFV - Technical Institute of Fruit Arboriculture and the vine

INTRODUCTION

Olive oil is a vegetable food product that provides us with pleasure of the senses, but not only that. Even in the ancient times, the Egyptians and the Greeks understood its incredible powers for cooking, beauty, health and home. Being both an agricultural and cultural product, olive oil is one of the pillars of the Mediterranean civilization (Frédérique, 2010; Breton & Bervillé, 2012). This “liquid gold” reflecting the sun was one of the first riches traded around the Mediterranean (Auzias & Labourdette, 2012).

Olive oil forms the basis of the famous Mediterranean diet, the health benefits of which have been verified for millennia. The Italians appreciate it to the point of consuming almost 14 liters per person per year, while the French barely exceed 1 liter, owing to both culinary tradition and cost reasons. Extra virgin olive oil is priced more highly than seed oils, but its gastronomic value and health benefits are far superior (Auzias & Labourdette, 2018).

This article presents the trends in olive oil consumption in some Mediterranean countries (Spain, Italy, France, Greece, Algeria, Morocco, Tunisia and Egypt). Its objective is to observe the trends in the production and

consumption of olive oil worldwide, with a focus on a few countries in the Mediterranean, particularly Algeria. The article examines the consumers' behavior towards olive oil in the countries considered (perception of prices, frequency of consumption and type of product).
Our comparative study allows us to position the Algerian consumption model for olive oil in the Mediterranean and to offer some recommendations on the marketing strategies that must be adopted by agrifood companies in order to develop this sector and consumption of olive oil in Algeria.

OLIVE OIL IN THE WORLD: WHAT ARE THE DEVELOPMENTS?

Scattered throughout the Mediterranean basin, olive groves occupy an area of around 11 million ha, 48% of which are located in Spain. The country is therefore undoubtedly the world leader, with more than 1.3 million tonnes of olive oil produced. Half of its production is exported. Spain is also the leading producer of table olives. The economic weight of the olive is such that significant efforts have been made in the field of research and technical development, thus placing Spain far ahead of its neighbors. Italy, the second largest producer in the world, seems far behind with its 480,000 tonnes of oil produced. A delay for which it pays more, while its production does not cover its consumption needs. It is followed by Greece, which produces more than 300,000 tonnes of olive oil (Auzias & Labourdette, 2018).
This crop represents an important sector of agriculture and it is practiced in 50 of 54 municipalities of the country. A veritable institution in the Hellenic peninsula (Greece), the average consumption per inhabitant and per year is around 25 kg. Although the European Community has a dominant position on the world market, the countries of the Middle East and the Maghreb play an important role. In Syria, the olive tree is paramount in history as in the economy. Various researches claim that it is from this country that the cultivation of the olive tree spread throughout the Mediterranean basin (Fig. 1) (Loussert & Brousse, 1998). With more than 180,000 tonnes of oil produced, olive growing is the main source of income for a large part of the population. It is folowed by Turkey (160,000 t), where more than 30% of agricultural land is devoted to olive growing, Tunisia (140,000 t), Morocco (120,000 t) and Algeria (50,000 t). In contrast, production in other parts of the world remains negligible. However, we can cite Chile, which has a great olive growing tradition, the presence of this tree having been known since the arrival of the Spanish in 16th century (Auzias & Labourdette, 2018). Olive growing has however become an emerging sector and has undergone significant development since the end of 1990s. Its production is around 20,000 tonnes, and the quality parameters are particularly demanding: Chilean oils are today internationally recognized. Argentina is also one of the main producers in South America with around 15,000 tonnes.

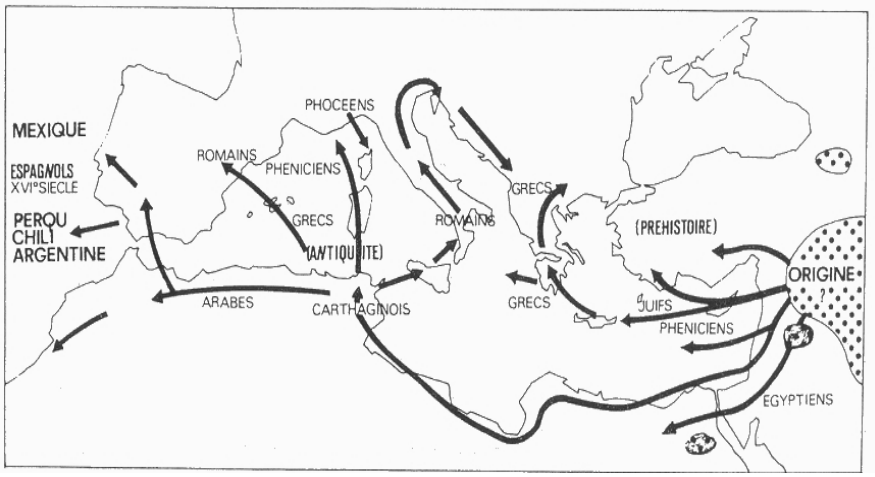


Figure 1. Propagation of the olive tree in the Mediterranean (Source: Loussert & Brousse, 1998)

Studies show that the country could be among the top ten producers in the world in the coming decades, following massive investments made in recent years. Australia, also at 19,000 tonnes, is expanding as well (more than 7 million trees have started production since 2006). Olive groves are also found in the United States (mainly in California), with 6,000 tonnes of oil produced (the equivalent to French production), and even in China, where the area planted today amounts to around 20,000 ha. These young olive trees are not yet productive, but with Chinese consumption in

full expansion (imports of olive oil increased by 80% between 2001 and 2007), one can think that the country will choose to become a (formidable) competitor tothe Mediterranean countries (Breton & Bervillé, 2012).

1. History of olive oil extraction

Extraction of olive oil can be done in a very simple way. By crushing a handful of olives in your hand, you can see a few drops of oil escape. Since the ancient times, people have extracted oil from olives. Initially, they started with rudimentary means and then introduced new techniques to improve yields. About 5000 B.C., crushing of olives was done using a pestle or a stone, then by twisting a cloth in which olive paste was placed and then crushing with wooden "wedges". After that, 600 B.C., hand-rolled stone rollers were used, followed by introduction of a perpendicular cylindrical wheel with rotary movement actuated by hand or by an animal. Around 400 years ago, people used a lever press as the olive paste is placed in bags, and then crushed with a tree trunk fixed on one side and maneuvered on the other. Until about a century ago, people used a screw press, which pressed directly or indirectly on the olive paste placed in scourtins made of various vegetable fibers (rope, wicker, etc.). Different techniques have coexisted over longer or shorter periods, while some are still used in certain countries.

Operation of grinding wheels and presses has also evolved in terms of the used energysources. From "blood" mills powered by humans or beasts, we moved to mills powered by water and then electricity. Separation of oil and water was done until recently by simple decantation. The liquid was placed in large stone or earthen bins and the oil, which rose to the surface, was collected by hand using a metal sheet or a pan. Today, centrifuge is generally used. Until recently, storage was done in amphorae or jars. Nowadays, stainless steel tanks are used (Tramier Industries, 2015).

There are a number of factors largely influencing the final quality of the oil: upstream of production, the region from which olives originate (soil, climate, etc.), the care given to the trees, the selection of varieties, or the date of harvest. People's expertise comes into play at each of these stages.

Nowadays, the harvested fruits are brought to the mill, where it is decidedfor how long they will be stored depending on their maturity (usually a few days), then they are sorted and washed if necessary. The following stage is grinding. The principle is simple: we crush the olives, with or without pits according to the traditions of the mills, until they are reduced to a paste which will be kneaded to ease the pressure. The olive paste (pulp + nucleus) is then kneaded to amalgamate the microparticles of oil and facilitate extraction. Mixing is done at a temperature below 27° for 30 to 40 minutes depending on the variety, which is the guarantee of the oil known as simple cold pressing. After mixing, the olive paste is sent to the horizontal separator decanter where the liquid is separated from the solid. Centrifugal force separates the oil from the dough. The remaining pulp made up of fragments of pits, crushed pulp and water from vegetation is called "pomace". The pomace will take the waste path for recycling into compost. Oil and water pass through the vibrating screen for a final cleaning and then into a vertical cylindrical tank for the last step: extraction by centrifugation. The centrifuge separates the remaining organic matter from the oil. Olive oil should be stored away from air (clogged container) and light so as not to oxidize and go rancid. The term "virgin olive oil" refers to the olive oil that is pure fruit juice, extracted via mechanical processes which have not affected the quality of the fruit (www.huilesdolive.com).

2. Worldwide olive oil production

The world production of olive oil increased from around 860,000 tonnes between 1947/48 and 1950/51 to 1,475,000 tonnes on average in more recent years (period 1976/77 to 1981/82), which keeps it in the sixth place in the world production of edible vegetable oils after (in order of importance): soybean oil, sunflower oil, rapeseed oil, peanut oil and cottonseed oil (Denis, 1985). According to the IOC (2017), the figures for 2017/18 olive growing season indicate an increase in olive oil production of 12% compared to the last campaign. According to the data presented by countries in November 2017, the world production would reach 2,900,000 tonnes (IOC, 2017). These figures are still provisional and subject to further updates (Fig. 2).

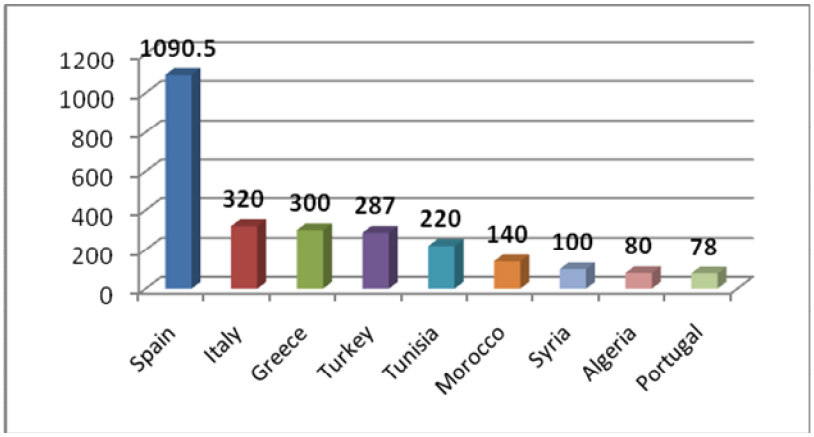


Figure 2. The main producers of olive oil in the world in 2018* (* Unit in Thousands of tonnes)
(Source: IOC - International Olive Council, 2017)

1. Olive oil production in the Mediterranean

The leading producer of olive oil in the world and in the Mediterranean is Spain, with high production throughout this period (2004 to 2015).

The statistics in this graph clearly show alternating production every year or two for all countries. This is mainly due to climate changes and the nature of the olive trees (intrinsic factors). The second place was occupied by Italy until the 2013/14 campaign, as in 2014/15 it became 4th and gave way to Tunisia with a production volume of more than 340,000 tonnes (linked to the olive killer bacteria "*Xyllela fastidiosa*") (IOC, 2015). Greece ranked 3rd in the campaignsof 2010/11, 2011/12, 2012/13 and would be so until 2015/16, according to the forecasts. In 2010/11, the quantity produced by Tunisia was double compared to Algeria, which occupied 7th and 8th place successively (Fig. 3).

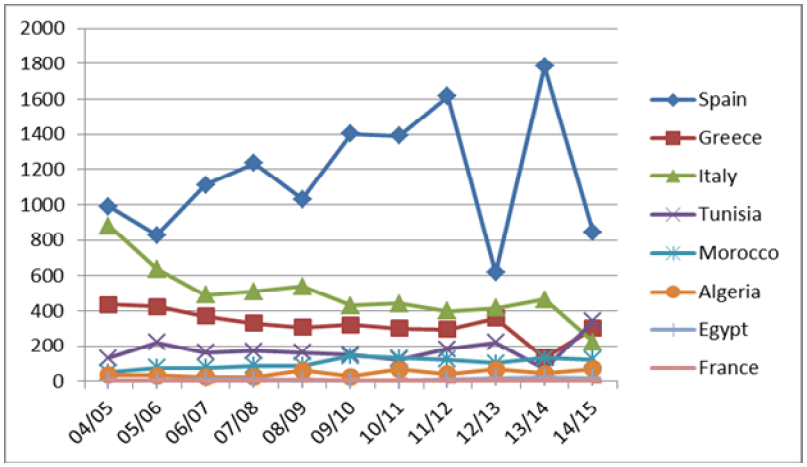


Figure 3. The production of olive oil in the Mediterranean for the period (2005-2015)* (*Unit in Thousands of tonnes)
(Source: Established by the authors from the IOC database, 2017)

4. State of the olive oil sector in Algeria

Olive growing is the most popular fruit crop in Algeria. It is one of the countries of the Mediterranean basin whose climatic conditions favor cultivation of olive trees. It should not be forgotten that even during the colonial period, olive growing was a totally Algerian sector. At the end of 1960s, Algeria produced high-quality oil which was exported to France, Belgium, England, Germany, etc. But this ancestral know-how was undermined in the late 1970s by competition from sunflower oil, soybeans and rapeseed, which were quick to produce in large quantities. Abandoned for many decades, olive trees suffered the horrors of terrorism and the ravages of government negligence (Ait Mouloud, 2014). The yields were poor, and olive oil was becoming increasingly rare. The prices charged by producers were high and exceeded the tolerable threshold. However, the olive oil sector was able to restart at the end of 1990s, and nowadays it occupies nearly 400,000 ha (ONFAA, 2014). In ten years, the surface area of exploitation

multiplied by 2.5 rising from 165,000 ha in 1999 to 390,000 ha in 2012, according to the Technical Institute of Fruit Arboriculture and the vine (ITAFV, 2015). It is classified as the most important arboreal sector, all the more since it covers 38.7% of the arboreal areas with 32 million olive trees distributed on 100,000 olive-growing holdings (Ghani, 2016; Izouaouen, 2016).

THE OLIVE OIL TRADE IN THE MEDITERRANEAN

In international trade, the progression was higher. Imported tonnages increased from nearly 120,000 tonnes on average between 1949/50 and 1952/53 (representing 12.3% of the world production) to almost 236,000 tonnes between 1978/79 and 1981/82 (corresponding to 15.4% of the world production), after reaching an average of 288,300 tonnes during the period 1969/70 – 1973/74 (said tonnage then representing 20.4% of the average world production). Before the Second World War (period from 1928/29 to 1937/38), the international trade had involved 211,300 tonnes on average of olive oil for the world production of 870,000 tonnes, which corresponded to 24.2% of the said world production.

In addition to the strong fluctuations recorded from one olive growing season to another (fluctuations ranging from 444,000 tonnes to 1,146 tonnes or even from 572,000 tonnes to 1,382,000 tonnes during the period from 1947/48 to 1955/56), there were unfavorable circumstances arising especially in international trade already disrupted by the disruption of normal trade flows during the Second World War. These are some of the reasons whyas soon as in 1950 and later, from 1953, the producing and importing countries concerned started, with the support of the FAO, to implement the international agreement on olive oil (entered into in 1956 and entered into force from 1959) based on the principles recommended by the Economic and Social Council of the United Nations for intergovernmental commodity agreements and subsequently adopted by the United Nations Conference on Trade and Development.

This is how, with a view to developing international trade in olive oil, independently of the measures relating more specifically to the market regulation (regulatory storage, supply and delivery contacts between buyers and sellers, etc.), numerous measures have been taken to normalize the market in international trade (Denis, 1985).

1. Import of olive oil into the Mediterranean

While Italy reduced its imports of olive oil from 2005 to 2015, Spain tripled it during this same period. Spain remains today the largest importer of olive oil in the Mediterranean with 104,700 tonnes (Fig. 4). As for Italy, it had the import volume of 96,000 tonnes in 2014/2015. It is followed by France with 10,900 tonnes of olive oil imports during this last campaign (IOC, 2017).

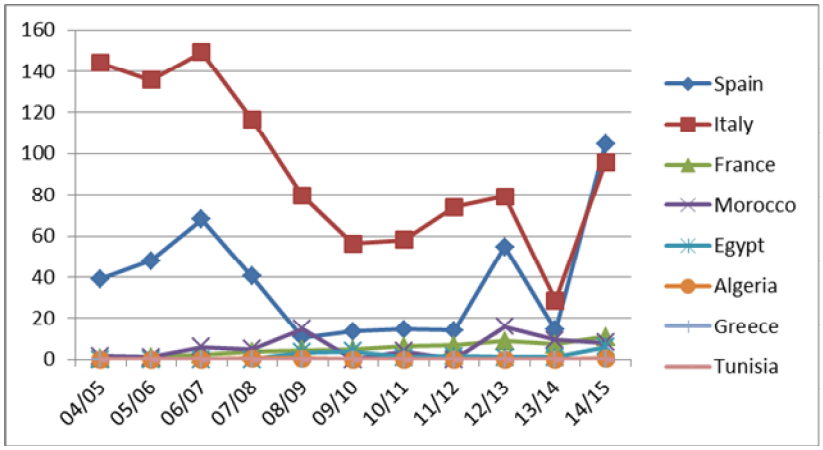


Figure 4. Importation of olive oil in the Mediterranean for the period (2005-2015)* (*Unit in Thousands of tonnes)
(Source: Established by the authors from the IOC database, 2017)

2. Export of olive oil to the Mediterranean

The main producer of olive oil in the world and in the Mediterranean in the period from 2004 to 2014 was Spain and systematically it was the main exporter (mainly to the EU and North Africa in the Middle East), Fig. 5. Tunisia today occupies the first place on the world scale for the 2014/2015 campaign, dethroning the world leader and thus generating record revenues of 1.90 billion Tunisian dinars. In 2015, Tunisia exported olive oil mainly to Spain (which itself exports to the EU) (IOC, 2015). In addition, Morocco mainly focuses on the following three markets:

the United States, Italy and Spain, with respective shares of 54%, 20% and 18% on average over the period 2007-2012 (DEPF, 2014).

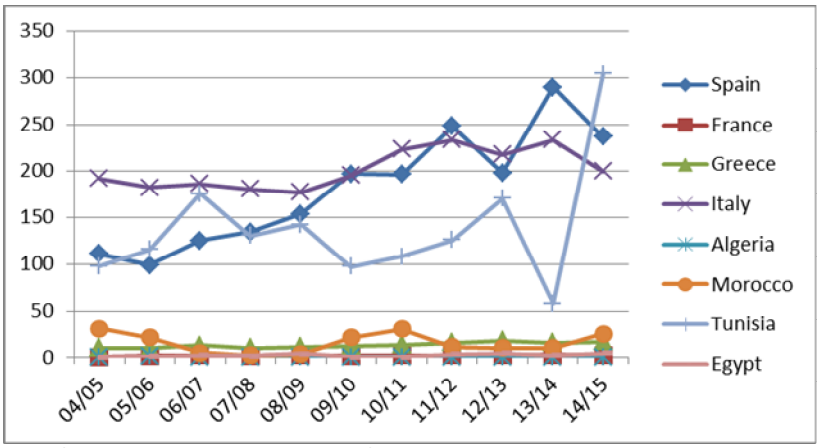


Figure 5. Export of olive oil to the Mediterranean for the period (2005-2015)* (*Unit in Thousands of tonnes)
(Source: Established by the authors from the IOC database, 2017)

CONSUMPTION OF OLIVE OIL IN THE MEDITERRANEAN

Although Italy retains the first position as regards the volume consumed, it decreased from the 2006/07 campaign to 571,700 tonnes in 2014/15. This lowest volume in the analyzed period is very similar to the consumption figures for Spain (Fig. 6).

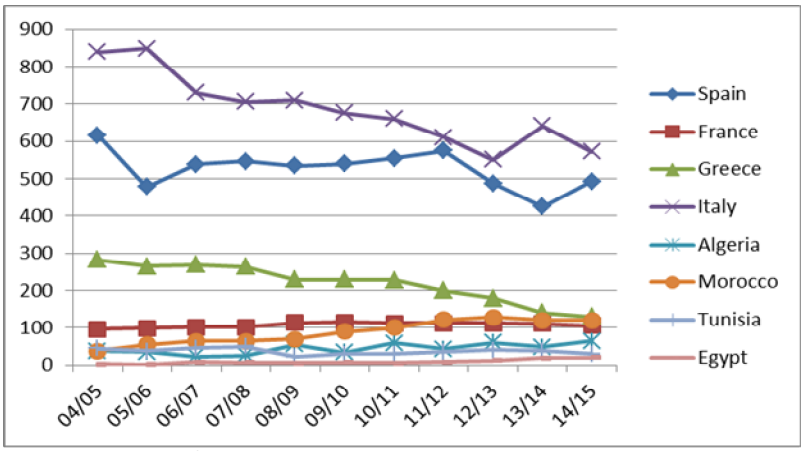


Figure 6. National consumption of olive oil in the Mediterranean (2005-2015)* (*Unit in Thousands of tonnes)
(Source: Established by the authors from the IOC database, 2017)

Like Italy, Greece recorded a sharp drop in consumption since the start of the economic crisis affecting this country, reaching values of 130,000 tonnes, which is a decrease of 22% compared to the level of two decades ago. Spain, for its part, has always shown a more irregular trend in consumption, which today seems to stabilize at the values slightly above 500,000 tonnes (the same level as Italy) (IOC, 2017).

1. Consumption trend of olive oil in the Mediterranean (Per capita/kg/year)

Greece, despite the decrease in its total consumption, retains its first position, with 16.3 kg of olive oil per capita and per year, followed by Spain with 10.4 kg, Italy with 9.2 kg and France with consumption between 1.2 and 1.7 kg. It is in Morocco (and Turkey) that the increase in consumption wasthe greatest in the past 25 seasons (where production has also increased). Consumption increased in Algeria, while it decreased in Tunisia. In 2013, the annual consumption per capita/year in this group of countries was lower than that of the European Union countries (Fig. 7).

In Morocco and Tunisia the consumption of olive oil was around 3.9 and 3.7 kg/h/year, respectively. Algeria was on the same level as Croatia and Montenegro with 1.5 kg/h/year. As for Egypt, it had a per capita consumption level close to that of Hungary, Poland and Romania with 0.1 kg/h/year and it is considered very low compared to the Mediterranean diet.

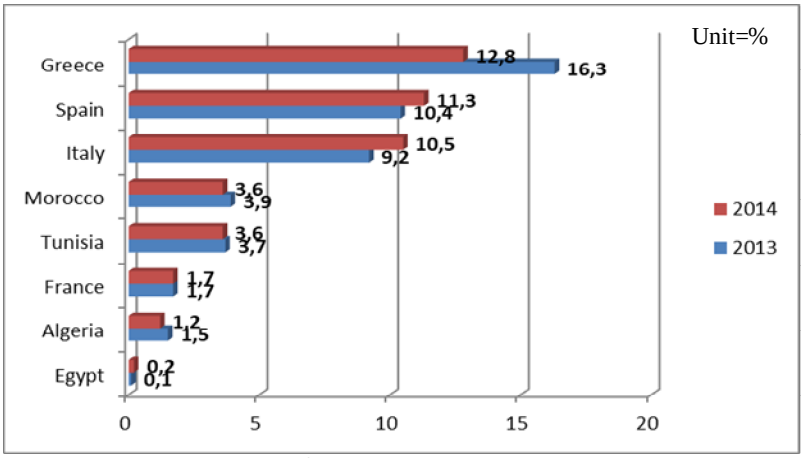


Figure 7. Consumption trend of olive oil in the Mediterranean (Per capita/kg/year)
(Source: Established by the authors from the IOC database, 2015)

2. Consumption of olive oil in Algeria

In Algeria, for example, 72.6% of consumers believe oils, and especially olive oil, among very expensive foods (Chikhi & Padilla, 2014); olive oil ranks 28th among the priorities and daily food preferences of most Algerian consumers (0.25%) (Media Sens, 2009).An Algerian generally consumes 1.5 kg of olive oil per year, or 4.1 g per day (Amrani, 2015).

According to the ITAFV, the Algerian State wants to increase consumption per individual in the coming years, and to boost the olive sector, which creates direct and indirect jobs. According to its forecasts, an increase in the consumption of olive oil of up to 3 kg/h/year doubles the current consumption.

The authorities have just launched an ambitious program which includes entering into productionof a total olive growing area of almost 180,000 ha over the next five years, which will add to the currently producing area, estimated at 200,000 ha of olive trees. According to the ITAFV, this approach, aimed at improving Algeria's ranking, will require a reorganization of the olive growing sector at all levels, by creating a transparent and organized national market.

According to ONFAA (National Observatory of Agriculture and Agrifood Industries), there has been an increase in prices of around 33% this year compared to the previous year. The ITAFV, highlights the following observation: a price varying from 550 to 700 DZD per liter at the oil mills, a price ranging from 650 to 800 DZD per liter at the level of retailers and a price ranging from 110 to 260 DZD for a packaged oil of 33 cl and from 600 to 900 DZD for a capacity of 75 cl (Saad Alami, 2016).

According to the report produced by the ITAFV committee on "quality strategies for olive products" (Fig. 8), and based on the analysis of olive oil samples taken at random from the oil mills, virgin olive oil dominated with 37.43% of the oils produced during the 2014/2015 campaign.

The latter, together with the current virgin olive oil and lampante olive oil, constitutes the categories of oil most produced in Algeria at the expense of extra virgin olive oil which accounts for only 7.48% of oils produced (compared to 25.64% during the 2013/2014 campaign).

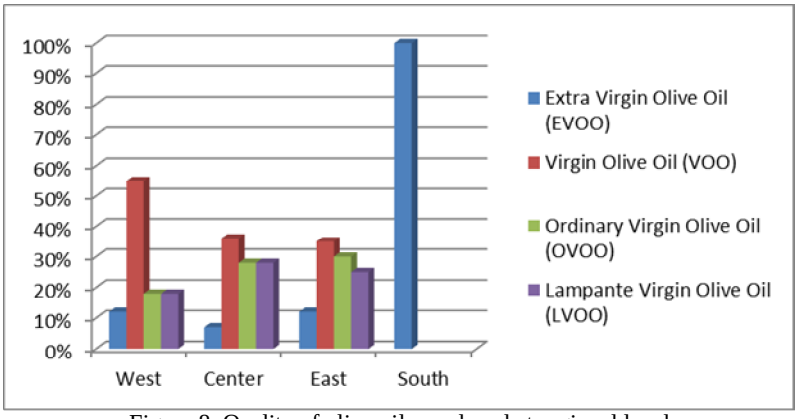


Figure 8. Quality of olive oils produced at regional level
(Source: ITAFV*- Technical Institute of Fruit Arboriculture and the vine, 2015)

Regarding the production area during the 2014/2015 campaign, virgin and current olive oils were produced in the center and the east of the country while the west region supplied, for more than half of its production, virgin olive oil. Most of the extra virgin olive oil came from the southern region.

Packaging of olive oils produced in Algeria is gradually improving, especially in modern extraction units which market their products locally and which manage to export abroad. These units are obliged to apply certain laws relating to the packaging of olive oil. These products are stored in special tanks (stainless steel) which allow better conservation and limit the passage of light and heat by an adequate temperature and block the entry of foreign odors which can negatively influence the sensory quality of oils. Packaging in traditional units is completely manual, from filling to labeling. In general, labeling of olive oil currently poses a real problem of compliance, especially by European standards, and remains insufficient with the exception of a few brands that export their products.

In addition, many local consumers prefer to buy olive oils from traditional extraction units nearby. Most of these units do not fully comply with hygienic conditions throughout the supply chain (dust storage until the final sale). Generally, it is consumers who bring back plastic bottles for filling on site. These bad practices lead to degradation of the quality of these oils. In Algeria, olive oils are marketed through various channels. They are sold in fruit and vegetable markets and stores, and by the roadsides, especially in places and rural areas where traditional extraction units are located.

In the absence of specific Algerian regulations relating to packaging, labeling and marketing standards for olive oils on the one hand, and those relating to taxation and rigorous control procedures on the other hand, the marketing organization of this sector remains amateurish, despite the progress observed in recent years for certain local olive oils intended for export, but this is still insufficient compared to the high potential and existing know-how.

In terms of the price of olive oil, it varies depending on the production of the olive-growing campaign, for example this year the price was between 600 and 700 DZD/liter. Knowing that the price difference between “extra virgin” and “common” olive oil is insignificant, it does not encourage packers to invest in a quality product.

A large majority of consumers do not know how to choose quality olive oil and do not know the concept of categories,but theybuy oils based on the region of origin, or word of mouth, or they buy from the usual oil mill (Hadjou, 2013; Lamani et al., 2015; El Badaoui & Ait El Mekki, 2017). According to various surveys carried out, majority of Algerian consumers prefer the taste olive oils fusty or old oils (generally acids) and turn away from quality olive oils such as “extra virgin” which are very little consumed, and this is because of the ignorance of these consumers of the sensory quality of olive oils.When we talk about the marketing techniques of local products, in particular olive oil, Algeria is far behind compared to the neighboring and European countries in terms of creating labels or collective marks for promotion of the local product or soil.

CONCLUSION

The consumption of Algerian olive oil remains lower compared to that of the countries of the Mediterranean basin (1.5 kg/h/year vs.16.3 kg/h/year in Greece). Low domestic production of olive oil in comparison with other Mediterranean producing countries, lack of public aid as well as climatic hazards are all factors preventing Algeria from finding a good place in the export market for olive oil.

We propose some marketing strategies (Schlegelmilch, 2016; Aurier et al., 2016; Kotler et al., 2016) which can be adopted in order to increase consumption and develop the sector of olive oil in Algeria:
- Improve product policies: Multiply the production of olive oil (more cultivated area, increase the extraction capacity of oil mills, more financial aid from the state, etc.); Promote the quality of olive oils (offer more product choices) (extra virgin olive oil, virgin olive oil, common olive oil); Make efforts to label some Algerian olive oils (geographical indication, designation of origin controlled) in order to penetrate international markets.
- Adopt pricing policies that are more accessible to consumers (depending on the choice of product); Seek to reduce the production cost of a liter of olive oil (5.11 EUR), which is deemed higher compared to Tunisia, Morocco (2.36 and 1.92 EUR).
- Improve communication policies: More publicity for Algerian olive oil on all media (TV, Radio, Internet, etc.); Impregnate and inculcate the culture and education of the olive tree and olive oil on the stories and its benefits, through raising awareness of the young generations and including it in school curricula; Organize more fairs and promotions of olive oil throughout the national territory.
- And finally, develop more adequate and fairer distribution policies at the national and international level. Algeria has several potentials, in particular for the export of locally produced olive oils to the world market.
Market research is therefore essential to assess the demand and supply of the product in the target country and to determine its marketing possibilities. The decisions on theexport are made based on the results of the market research. The risks must be measured and accepted, the objectives must be set, the budget must be established and the action plan (export policy) implemented.
Thus, the appropriate marketing strategies to penetrate the global market, in addition to those cited above, are translated as follows:
1. Increase the production of olive oil by improving its intrinsic quality (physicochemical and sensory), but also its extrinsic quality (compliance with international standards in force [IOC], brand and brand image, packaging and labeling, innovation and design),
2. Ensure permanent physical presence, particularly in international olive oil competitions in order to exhibit various Algerian brands of this product,
3. Reduce the production costs to have competitive prices (cost domination)
4. Encourage development of the olive sector by the state (public policy, funding, administrative support and popularization) and encourage its stakeholders to create a traceability system,
5. Promote the specific features of Algerian olive oils through creation of the labels (designation of origin or geographical indication),
6. Establish an institution specializing in olive oils to manage marketing and export (office or agency). Establish a partnership or acquire a local business in the target countries,
7. Marketing olive oils through online markets (E-commerce).

Conflict of interest: The authors declare that they have no conflict of interest.

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