

# OLIVE OIL PRODUCTION

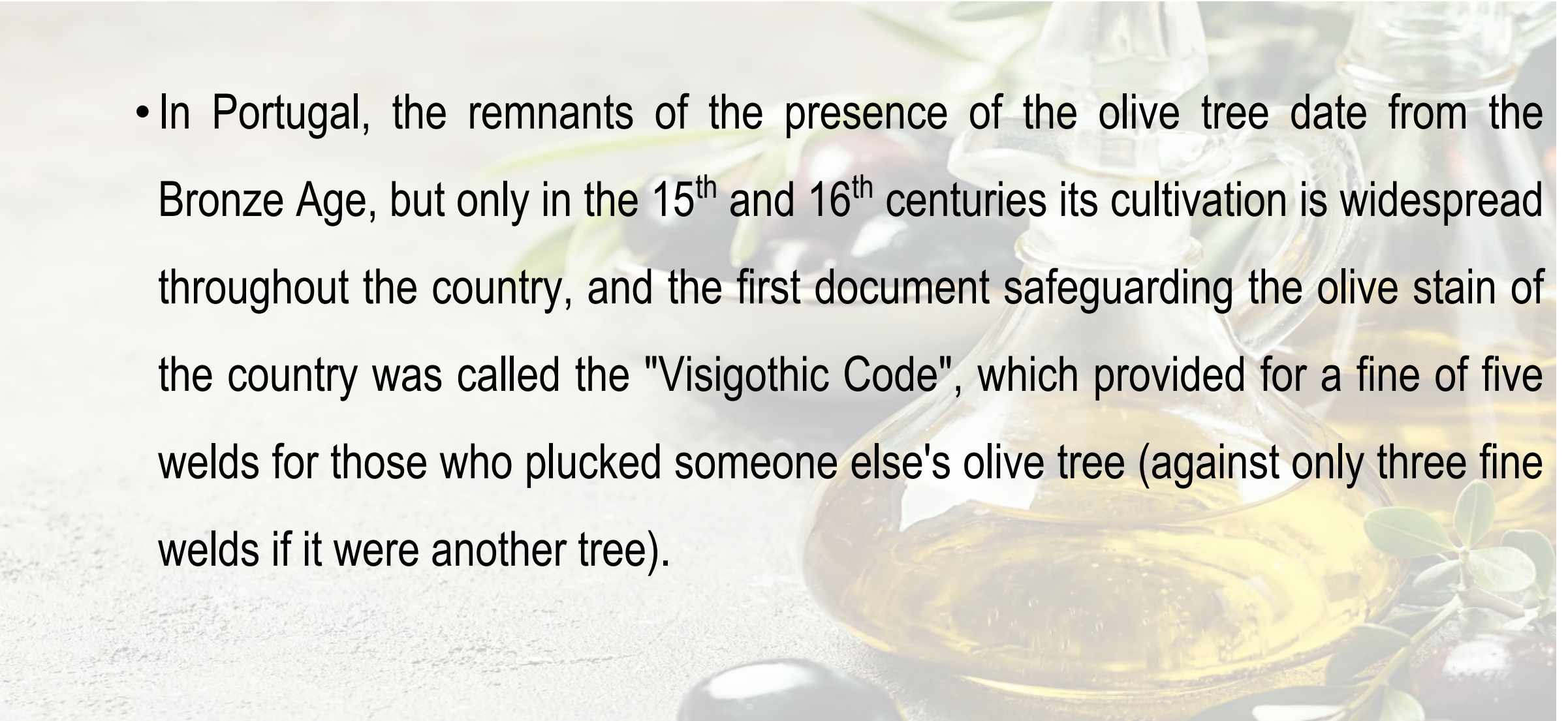
in Portugal

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# OLIVE OIL HISTORY IN PORTUGAL(I)

- In Portugal, the remnants of the presence of the olive tree date from the Bronze Age, but only in the 15<sup>th</sup> and 16<sup>th</sup> centuries its cultivation is widespread throughout the country, and the first document safeguarding the olive stain of the country was called the "Visigothic Code", which provided for a fine of five welds for those who plucked someone else's olive tree (against only three fine welds if it were another tree).



## OLIVE OIL HISTORY IN PORTUGAL(2)

- It was in Évora (1392) that the first regulation of the lagareiro craft was made, but only in the 16th century the cities of Coimbra (1515) and Lisbon (1572) followed its example. Also the Moors foral from Lisbon, Alcácer do Sal, Palmela, Almada, given by D. Afonso Henriques in 1170, and later the Moors from the Algarve (1269) and Évora (1273) expressly refer to the culture of the olive tree. The city of Tomar, seat of the Order of the Templars, saw the olive cultivation regulated since 1162, by the authority of master Gualdim Pais, in the first charter granted that village, and in Coimbra and Santarém, in the 12<sup>th</sup> century, the olive culture, the extraction of olive oil and their trade was already practiced to a considerable extent.



## OLIVE OIL HISTORY IN PORTUGAL(3)

- Although production processes continue to be rudimentary, olive oil has been awarded at international exhibitions. "Herculaneum Olive Oil" receives first prize at the Anvers (1894) and Paris (1889) universal exhibitions. The olive oil sector also had major entrepreneurs, whose claim to action was, in the 1930s, quite reasonable. These large producers mainly demanded that imports of olive oil and other oils be made conditional on them, arguing that importation should be used only, for example, at high prices.

# OLIVE OIL HISTORY IN PORTUGAL(4)

- Between 1945 and 1947, there was an outbreak of industrial structures in the country, including oil mills, but this industrial development led to the exodus of rural populations to the cities, making the labor force scarce agriculture.
- In recent decades we have seen a new focus on olive oil production, with the planting of new olive groves on an unusual scale in our country, using the most advanced techniques and technologies to optimize the entire process, from olive production to obtaining olive oil.



# PRODUCTION



- World production of olive oil is limited for soil and climate reasons to two areas of the globe that lie between the 30<sup>th</sup> and 45<sup>th</sup> parallels of the northern and southern hemispheres. About 95% of the world's olive area is currently concentrated in the Mediterranean Basin, with EU producing countries (Spain, Italy, France, Greece, Portugal, Cyprus, Croatia, Slovenia and Malta) accounting for 71% of production worldwide.
- The other main producing countries are Tunisia (4%), Turkey (6%), Syria (3%), Morocco (6%) and Algeria (2%).



# STEPS OF OLIVE OIL PRODUCTION





# 1<sup>ST</sup>: OLIVE PICKING

- The olive tree blooms in the spring and the fruit begins to mature, turning from green to black, from summer to late autumn or early winter, when the harvest takes place.
- Olive picking can be done by hand using sticks (the tree is tapped with large, flexible sticks so that the olives fall on the leaves) and, more modernly, using mechanical means of vibrating the tree.





## 2<sup>ND</sup>: TRANSPORT FROM OLIVE TO LAGAR

- The harvested olives are transported to the mill for processing.
- Olives taken from the ground must not be transported together with olives harvested from the tree. Transport should be done in open rigid boxes so that undesirable fermentations do not occur. They should never be carried in bags.



### 3<sup>RD</sup>: PRELIMINARY OPERATIONS (I)

- On entering the press the olives must be classified according to the variety, origin of the soil or tree, whether they are healthy or attacked by pathogens, in order to be worked separately according to class.
- In each class the olives are ventilated so that the air currents separate the accompanying leaves. They are also washed with running water.



Separation of olives and leaves that are useless for production



### 3<sup>RD</sup>: PRELIMINARY OPERATIONS (2)

- At this stage a laboratory sample is taken, weighed, graded and stored. The olive is separated into batches according to quality.
- Olives should not be piled up but should preferably be stored in brine tanks. To obtain a quality olive oil, the olive must be worked within 24 hours of harvesting.



Second (manual) separation of leaves and olives

## 4<sup>TH</sup>: OLIVE GRIND CLEAN AND PASTE PREPARATION

- The milling consists of grinding the olive until it forms a paste, that is, it is a process of preparation of the olive paste.
- In the past stone mills (millstones or galgae) were used. Today we use metal hammer mills.
- This paste is then beaten and heated in a mixer to increase the extraction yield, facilitating the separation of the olive oil.



Machine for the production of olive oil



# 5<sup>TH</sup>: SEPARATION OF SOLID AND LIQUID PHASES (OLIVE OIL EXTRACTION)

- When the mass is properly beaten and heated, the extraction itself is carried out. It corresponds to the separation of the solid phase (bagasse) from the liquid phases (olive oil and vegetation water).
- This operation is performed by pressure (classical), centrifugation (continuous) and / or percolation or selective filtration (Sinolea) systems.



Machine that controls the production of olive oil



Bagasse production machine



## CLASSIC SYSTEM (DISCONTINUOUS)

- The dough is placed between the mats and subjected to pressure to separate the oily must (mixture of olive oil and water), which is then decanted to obtain the difference in density of olive oil.





# CONTINUOUS SYSTEM (BY CENTRIFUGATION)

## 3 phase:

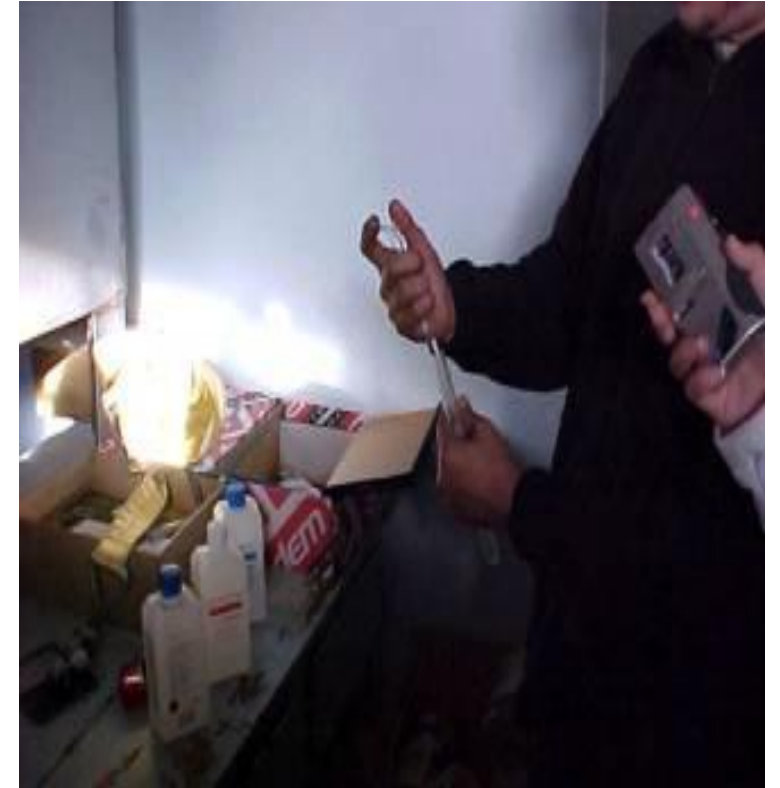
- To the beaten olive paste is added water and passed through a horizontal centrifuge where the solid part of the oily must is separated. The must then goes through a vertical centrifuge from where the olive oil separates from the vegetation water.

## 2 phase:

- The process is practically the same as the previous one except that instead of adding water to the mass, the water in the system comes out together with the wetter solid phase. This system has the advantage over the three-phase system of producing oils with less reduction in natural antioxidant content such as polyphenols.

## 6<sup>TH</sup>: STORAGE

- The obtained olive oil is stored in warehouses until its sale.
- Ideally, the walls and ceilings protect against high temperatures and do not let in foreign odors. The ideal storage temperature is between 15° and 18°C to allow a correct maturation of the oils without favoring their oxidation. There should also be low light.
- The material of the deposits must be inert.



Olive pH test



# 7<sup>TH</sup>: OBTAINING REFINED OLIVE OILS REFINING (I)

- Due to weather conditions, late harvests, long waiting times before the olives are worked and errors in the process indicated above, virgin olive oils sometimes have defects such as high acidity and strange odors and tastes which make them unpalatable fit for consumption, so they must undergo a refining process to eliminate defects.
- Refining consists of three stages, each of which tends to eliminate a particular process:
  - Neutralization
  - Discoloration
  - Deodorization
- In accordance with the Annex to Regulation (EEC) No 356/92 of 10/02/1992 the following definitions apply for refined olive oil.



Olive oil quality test

## 7<sup>TH</sup>: OBTAINING REFINED OLIVE OILS REFINING (2)

- Refined olive oil - Olive oil obtained by refining virgin olive oil with a free acidity expressed as oleic acid not exceeding 0,5 g per 100 g and having the other characteristics as specified in this category.
- Olive Oil - Olive oil consisting of blended refined olive oil and virgin olive oil other than “lampante” olive oil, with a free acidity expressed as oleic acid not exceeding 1,5 g per 100 g and having the other characteristics as specified in this category.
- Olive pomace oil - oil consisting of blended refined olive pomace oil and virgin olive oils other than “lampante” olive oil with a free acidity expressed as oleic acid exceeding 1,5 g per 100 g and having the other characteristics complying with those foreseen for this category.



Olive oil bottling and carboy labeling





## SOME CURIOSITIES



# DO YOU KNOW THAT

- All olives are black if they are allowed to ripen to the end.
- To extract 1 l of olive oil on average, 5 to 6 kg of olives.
- Unlike wine, olive oil does not improve over time, so it is advisable to consume it as soon as possible. When properly packaged, it can be retained without changing its characteristics for 18 months from extraction.
- Neil Amstrong left the moon an olive branch in gold as a symbol of peace.





# FOR THE WELFARE (I)

- Virgin Olive Oil retains the taste, aroma, vitamins, antioxidants, being the only vegetable fat that can be consumed directly, virgin and raw.
- Studies have shown that countries where the diet is traditionally rich in olive oil, such as the Mediterranean people, have a much lower incidence of cardiovascular disease.



## FOR THE WELFARE (2)

- Olive oil, due to its high content of monounsaturated fatty acids, is also advised in diabetes, positively influencing blood sugar and fat values.
- At the bone level, it favors mineralization, stimulating growth and favoring calcium absorption.
- It can also protect against some cancers, particularly breast cancer.





# SOME PORTUGUESE BRANDS OF OLIVE OIL



TOP 10



# COMMERCIAL BRANDS OF OLIVE OIL



DESDE  
1878





# REASONS WHY THERE IS NO PRODUCTION OF OLIVE OIL IN MADEIRA

- There is no olive oil production on our island, due to the existence of terraces that make it difficult to plant olive trees, nor is it an endemic plant, which increases production costs.
- In our region, the agricultural production focuses on three essential products: sugar cane, bananas and wine.





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