



Top Italian Extra Virgin Olive Oil Tasting

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SENSORY ANALYSIS OF OLIVE OIL

Sensory analysis, understood in a broad sense, is the result of a complex, dynamic interaction between various physiological, sociological, cultural, and economic factors. Indeed, it is a tool that each of us uses daily to judge and choose foods, clothing, work tools, and people, through our human sensory organs.

Studies on sensory perception, particularly those on olive oil (which are relatively recent compared to those on products that concern the Anglo-Saxon market), have shown that human sensory organs function as true measuring instruments. Mathematical laws have been discovered that link responses to a specific stimulus with the intensity of that stimulus. Moreover, it has been found that sensory organs consist of **cells specialized in recognizing** **specific types of molecules they come into contact with**. Tests were conducted to see if these sensory organs, like analytical instruments, possess a characteristic essential for any accurate analytical tool: the repeatability and reproducibility of measurements.

When a measurement is taken with an instrument, it must be consistent no matter how many times it's repeated and must be reproducible by others. This holds both for recognizing the type of substances to be evaluated and for determining their concentration. It was thus established that for a particular aroma, human sensory organs serve as accurate instruments for recognizing a given perception. For instance, everyone recognizes the scent of a rose, making it clear that everyone has cells specialized in detecting this type of aroma. Regarding perception intensity, tests were conducted to determine socalled "perception thresholds" (the intensity levels perceived by various individuals). Surprisingly, it was found that these perception thresholds vary from person to person. For example, some people are very sensitive to bitter sensations, while others are less so. This presented a problem, as one person's evaluation of the intensity of a certain quality might differ from another's. This fact means that a single person, however expert and skilled, cannot be the sole evaluator of the organoleptic characteristics of foods.

However, statistical research on individual perception thresholds has shown that groups of 8-10 randomly selected people from a population have **a group average threshold t**hat is consistent, similar to that of another group of 8-10 people from the same population.

In other words, groups of 8-10 individuals have a group average threshold that can be considered representative of the entire population's threshold. Therefore, such a group can be used as a measurement tool that provides valid results for the entire population.

When such a group is used as a **tasting panel** to evaluate the organoleptic characteristics of an olive oil (the term "panel" refers to a group of people assembled to make an assessment), its members **are asked to evaluate the presence and**











intensity of the oil's signature sensations, which can be either pleasant or unpleasant. Pleasant sensations originate from substances naturally present in fresh, healthy olives, because they are embedded in the membrane surrounding the oil droplets within the pulp cells. When olives are processed, especially during the pressing and malaxation phases, all the natural substances extracted are distributed in the oil and olive water, depending on their partition coefficient, which is greatly influenced by temperature. Therefore, the careful and limited use of temperature during extraction results in a greater harmony among the oil's natural substances, especially those responsible for its organoleptic characteristics, leading to a more pleasant product.

Among the organoleptic characteristics of an oil, one can also encounter unpleasant substances. These compounds, which remain offputting even when barely perceptible, are generally the result of degradation from fermentation or environmental pollutants. Indeed, distinguishing between these two types of sensations, the pleasant and the unpleasant, is the goal of an organoleptic test.

Like all human endeavors, when a person makes a judgment, they are essentially weighing positive and negative models they have stored in memory. Thus, individuals participating in the "panel test" tasting group are trained to recognize and remember both positive and negative patterns in oils. From the positive patterns, they recall the pleasant sensations derived from the natural compounds of fresh,

healthy olives. Indeed, these sensations collectively constitute the fundamental characteristic of olive oil: its fruitiness.

From the negative patterns, on the other hand, they recall the unpleasant sensations, referred to as organoleptic defects, which arise from the degradation of olives.

Each taster in the group, working independently in a specific booth, conducts the tasting following guidelines on a card codified by the EC through Reg. EC 796/2002. This card details both patterns: the negative one, which lists the most common organoleptic defects of olive oil, and the positive one, which describes the perception of the presence and intensity of fruitiness, including all the bitter and spicy nuances that make it more or less harmonious. The taster then marks down the intensity with which they perceive the oil's merits and any potential defects.

The group coordinator, known as the "Panel Chief," inputs the assessments from various tasters into a computer. If these evaluations, taken together, have a robust variation coefficient (method error), that is less than 20%, then the test is deemed reliable. Consequently, the median evaluation of the intensity of positive perceptions (merits) and negatives (defects) is the final result to consider, resulting in an objective assessment of an oil's organoleptic characteristics.





EXTRA VIRGIN OIL TASTING GUIDE

The sensory analysis of oil follows strict rules, adhered to by official panel tests so as to evaluate extra virgin oils and select those worthy of the PDO (Protected Designation of Origin) label. However, it's possible to apply certain criteria for personal and "home" evaluations, to learn to recognize high-quality extra virgin or simply the one you like the most.

Extra virgin oils are primarily **categorized by fruitiness** (the pleasant sensations derived from fresh, healthy olives), which can be **light**, **medium, or intense.** Additionally, some cultivars (olive varieties, of which Italy has many) tend to produce oils that are naturally sweeter or, conversely, very bitter and spicy. Choosing among these types can vary based on use, pairings, and personal taste, **absent flaws such as rancidity** (an unpleasant flavor resulting from oil oxidation), **fustiness** (a flavor similar to rancidity but milder, common to oils obtained from olives that start fermenting while awaiting milling), and **sediment** (a processing defect common to oil left in contact with impurities for too long).

Visual analysis

Clarity, density, and color are assessed.

Clarity indicates the oil's age and any filtration carried out. Suspended particles and deposits can be natural, but an excess suggests poor processing care. Density primarily indicates origin—for instance, Tuscan oils are generally dense, while Ligurian oils tend to be fluid. Color can depend on various factors (harvest time, cultivar, age) but isn't strictly an indication of quality, so it shouldn't be a primary consideration.

Olfactory analysis

Pour a small amount of oil into a glass. **Warm it slightly** with your hands to facilitate the diffusion of its volatile components, then inhale deeply through both nostrils. Wait a few moments before repeating, as one easily gets accustomed to certain aromas.

Taste analysis

Sip a small amount of oil from the glass without swallowing. You should try to spread it over the entire oral cavity with an action called "stripping", inhaling air while sipping to oxygenate the oil and swirl it in the mouth. While tasting, one can detect the oil's **consistency and fluidity** as well **as sensations of sweetness, bitterness, or spiciness** (the latter two, in particular, are positive traits) along with **other flavors like almond, green or ripe olive, and artichoke.**







THE OIL MILL

THE MILL. Oil mills can be one of two types: batch (or traditional) and continuous. The former uses granite millstones for milling, and the resulting paste is collected in baskets that are then mechanically pressed. The continuous system, on the other hand, involves a single production cycle to protect the product throughout processing. A significant advantage of the latter is the presence of the decanter, which separates the pomace from any water in the olives and its must. After this process, the must is sent to separators where the oil and water are divided.

<u>CRUSHING</u>. The first step in processing olives after washing. Here, the initial breaking of the drupes occurs through a system that can be "hammer" or "knife" based. It's a crucial phase because most of the aromas detected during tasting are formed here.

MALAXATION. This is the processing step that follows crushing. Here, the paste obtained in the previous stage is stirred so as to facilitate the breakdown of the emulsion between the water in the olives and oil. During this phase, the miller must strike the right balance between quantity and quality. While increased heating of the paste boosts yield, it diminishes the product's quality. This phase should last between 20 and 40 minutes. Extending it for longer will only expose the paste to more air contact, without increasing the yield, causing unnecessary oxidative stress (unless it's an oxygenfree mill).

DECANTER. A tool for extracting oil through centrifugation. Here, the pomace, olive water and must (oil + water) are separated. This step takes place after malaxation.



FILTRATION. After all these processing stages, the oil might appear cloudy. This indicates that the product contains suspended water particles and other minor impurities. Filtration is used to remove these particles, resulting in clear oils that can have a longer shelf life compared to their unfiltered counterparts.

MILAN 58тн ADB ANNUAL MEETING

4-7 MAY 2025





ITALY'S MAIN NATIVE VARIETIES

LIGURIA AND PIEDMONT

Taggiasca, Lavagnina, Colombaia, Pignola, Leccino

LOMBARDY Casaliva, Frantoio, Leccino, Pendolino, Sbresa

<u>VENETO</u> Casaliva, Grignan, Pendolino, Drizzar, Favarol, Fort, Raza, Trapp, Leccino

TRENTINO ALTO ADIGE Casaliva, Favarol, Raza

FRIULI VENEZIA GIULIA Belica (o Bianchera), Maurino, Leccino, Leccio del Corno, Buka, Carbona, Gentile di Rosazzo

<u>EMILIA ROMAGNA</u> Correggiolo, Ghiacciola, Nostrana di Brisighella, Leccino

TUSCANY

Moraiolo, Frantoio, Leccino, Pendolino, Correggiolo, Olivastra

MARCHE

Raggiola (o Raggia), Carboncella, Ascolana Tenera, Leccino

<u>UMBRIA</u>

Moraiolo, Frantoio, Leccino, Dolce Agogia, San Felice

<u>LAZIO</u>

Caninese, Itrana, Frantoio, Raja, Salviana, Leccino, Carboncella

ABRUZZO

Dritta, Gentile di Chieti, Intosso, Leccino, Cucco, Tortiglione

CAMPANIA AND BASILICATA

Ortice, Ravece, Pisciottana, Ortolana, Salella, Carpellese, Leccino, Racioppella

PUGLIA

Coratina, Ogliarola, Cellina di Nardò, Peranzana, Cima di Mola

CALABRIA

Carolea, Dolce di Rossano, Cassanese, Tondina, Ottobratica

<u>SICILIY</u>

Biancolilla, Cerasuola, Tonda Iblea, Nocellara del Belice, Nocellara messinese, Nocellara etnea, Ogliarola messinese, Giarraffa, Zaituna

<u>Sardinia</u>

Bosana, Semidana, Tonda di Cagliari, Nera di Oliena, Pitz'e Carroga







GLOSSARY

ANAEROBIC FERMENTATION: A series of chemical reactions allowing living beings to derive energy from specific organic molecules. The word "anaerobic" is used because the process occurs in the absence of oxygen..

BIO-PHENOLS: Natural organic molecules characterized by the presence of phenolic groups (aromatic compounds) and predominantly produced by plants' secondary metabolism. Bio-phenols are natural antioxidants present in plants and crucial for human health. They help reduce bad cholesterol, protect the stomach's gastric mucosa, and aid in preventing cardiovascular diseases.

BLEND: An oil produced with multiple olive varieties.

CULTIVAR: Another word for olive variety. In Italy, there are over 500 cultivars, each with different organoleptic characteristics. Depending on the quality of cultivation and pressing, these characteristics lend unique flavors and aromas to the final product.

DRUPE: A term used for any fruit composed of a membranous epicarp (skin), fleshy mesocarp (pulp), and an endocarp (pit) containing one or two seeds. This applies to olives, apricots, peaches, and other similar fruits.

EXTRA VIRGIN OLIVE OIL: Labelled as a "superior category of olive oil obtained directly from olives

and solely by mechanical means." The term "extra virgin" refers to to a commercial category where the free acidity level is below 0.8% per 100 grams.

FISCOLO (FILTRATION VESSEL): A container with a filtration system where crushed olives are placed before moving on to the mechanical pressing stage.

FUSTY: A defect in oil caused by olive fermentation, particularly from the formation of Clostridium and Pseudomonas bacteria.

LAMPANTE OIL: Olive oil with a free acidity level exceeding 2% per 100 grams.

MILLER: The individual responsible for olive pressing. The miller oversees the various stages of oil extraction.

MILLSTONE: A machine used for crushing olives. The millstone consists of one to four wheels.

MOSCA ("FLY DEFECT"): A defect in oil caused by the use of olives infested by the larvae of the olive fly (Bactrocera oleae).

MONOCULTIVAR (OR MONOVARIETAL): An oil produced with a single olive variety.

MUDDY SEDIMENT: A defect in oil caused by lingering sediment. It's a common problem with unfiltered oils, which, a few months after bottling, contain so-called "deposits" in the bottom of the bottle.



NON-SAPONIFIABLE FRACTION: A component of extra virgin olive oil (2% of the product) composed of various substances like squalene, phytosterols, betacarotene, polyphenols, oleuropein, and oleocanthal.

OLEIC ACID: A primary component of olive oil, oleic acid has major benefits for the heart and cardiovascular system. It's found in the saponifiable part of the oil (see definition). Chemically, it's a monounsaturated carboxylic acid, meaning it has a single double bond between various carbon atoms.

OLIVE: The edible fruit of the olive tree, composed of the skin (epicarp), pulp (mesocarp), pit (endocarp) and seeds. Olives are categorized into three groups: table olives (used solely for eating); oil olives (suitable for oil extraction); and dual-purpose olives (which can be used for both).

OLIVE POMACE OIL: Labelled as "oil containing oils derived exclusively from processing after olive oil





extraction and oils obtained directly from olives." Essentially, it's the oil obtained from processing olive pulp after initial milling.

OLIVE TREE: Botanical name Olea europaea. A fruit-bearing tree native to the countries of the Mediterranean basin, known for its longevity (olives are capable of living for hundreds of years). An evergreen tree, it has a cylindrical, twisted trunk with hard and heavy wood, and a conical crown.

PHENOLS: Substances derived from aromatic hydrocarbons (organic compounds featuring one or more aromatic rings) through the substitution of one or more hydrogen atoms.

PRUNING: A series of interventions carried out by humans to modify a plant's vegetation and fruiting. In olive growing, proper pruning of olive trees is essential for ensuring olive quality. It can be done manually or mechanically.

RANCID: A defect of oil that has undergone oxidation, commonly found in oils that have surpassed the 18-month expiration date.

SAPONIFIABLE FRACTION: A major component of extra virgin olive oil (98% of the product). It's composed entirely of oleic acid.

SECONDARY METABOLISM (OR "SPECIALIZED

METABOLISM"): difetto tipico dell'olio dovuto a un processo di fermentazione delle olive e in particolare dovuto alla formazione dei batteri Clostridium e Pseudomonas.

STRIPPING: In botany, secondary metabolism refers to the small molecule products of metabolism and pathways involved in ecological interactions (i.e. an organism's interaction with its environment).

VIRGIN OLIVE OIL: Labelled as "olive oil obtained directly from olives and solely by mechanical means." A commercial category identifying all oils with a free acidity level between 0.8% and 1.5% per 100 grams.



WINEY-VINEGARY: batterio che vive e si riproduce all'interno dell'apparato conduttore della linfa grezza, che può causare gravi danni alle piante. Quando una pianta viene infettata, i batteri portano alla formazione di un gel nello xilema (tessuto vegetale presente nelle piante vascolari), ostruendo così il flusso dell'acqua e bloccando la nutrizione della pianta.

XYLELLA FASTIDIOSA: A bacterium that lives and reproduces in the raw sap conduction apparatus of an olive tree. Xylella fastidiosa is capable of causing severe damage to the tree. When a tree is infected, the bacteria lead to gel formation in the xylem (vascular plant tissue), thus obstructing water flow and blocking nutrition.

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OIL-FOOD PAIRING

Extra virgin can be paired by "resonance"

If an oil possesses aromas of tomato (oils from the Monti Iblei or Colline Pontine PDO production zones, for example), it will pair well with tomatobased dishes. If, on the other hand, an oil is quite bitter (for instance, oils from moraiolo or coratina olives), we'll use it with bitter foods like radicchio arugula, or regional dishes where vegetal and herbaceous aromas stand out.

2 Raw meat or fish require oils with a light or medium fruitiness

The risk of using an overly intense oil with raw meat or fish is that it may mask the flavor of the main ingredient. If the meat or fish are of excellent quality, they'll be overshadowed by an overly intense extra virgin.

3 Intensely fruity oils pair well with robust, savory dishes

A delicate extra virgin olive oil will be overshadowed by recipes based on legumes or dishes like grilled red meat. It will simply provide an oily / fatty element, its flavors disappearing under the force of the stronger ingredients.

Extra virgin olive oil and chocolate

Although it might seem like a strange pairing, combining these two products isn't as odd as it seems at first glance. Chocolate, especially dark chocolate (at least 60% cocoa), pairs well with medium and intense extra virgin olive oils, with strong herbaceous tones and an almondy finish. Varieties like frantoio and moraiolo are good examples.

5 If they live together, they go well together

This famous saying by Jamie Oliver, taken from his television programs, doesn't provide the solution to all problems, but can be helpful for pairing food and olive oil. The oil produced in a particular terroir often pairs well with local recipes.







THE TASTING

FRANTOI CUTRERA Primo Dop Monti Iblei

A solid reality that combines quantity and quality, located in the province of Ragusa.

A model farm with many years of experience behind it and a latest-generation mill, which combine with the adoption of the most advanced working techniques.

Tomato, apple, aromatic herbs are the olfactory sensations that distinguish the aromatic texture of Primo Dop Monti Iblei, a monovarietal of Tonda Iblea of extraordinary elegance and complexity. On the palate it is medium spicy and not very bitter.

FONTE DI FOIANO Igp Toscano Monocultivar Frantoio

In an area that for decades has been dedicated to the production of excellent wines recognized throughout the world such as that of Bolgheri, the Di Gaetano brothers have decided to fly the flag of Tuscan extra virgin olive oil by focusing on technology and quality.

People come here not only to buy the precious extra virgin olive oil or to admire the olive grove and the avant-garde oil mill, but they can also stop for a relaxing stay and to eat well thanks to the presence of a farmhouse and a vegetarian restaurant.

The Igp Toscano is a single-variety oil mill that combines power and elegance, with its aromatic notes of artichoke, almond, cut grass, nettle and balsamic sensations. Great persistence on the palate thanks to the strong spiciness.





GAMBERO ROSS(





THE TASTING

DE CARLO Igp Olio di Puglia

De Carlo family has been producing excellent extra virgin olive oil for over a hundred years, always enhancing the native varieties of Puglia such as Coratina, Ogliarola and Peranzana.

The oil mill is a point of reference in the area, but the company also produces excellent pickled vegetables that are distributed throughout Italy.

The IGP certified oil is a balanced blend of the three varieties listed and represents the essence of Puglia in the form of a high-quality extra virgin olive oil. It is characterized by its notes of tomato, cut grass, almond and black pepper.



MARFUGA Affiorante Monocultivar Moraiolo Bio

Marfuga is one of the best companies in Umbria and stands out for its excellent quality consistency.

The Gradassi family's business path is one of continuous developments both in terms of technological innovations in the mill, but also on the commercial aspect that the owner Francesco has never put in second place compared to production.

This year, Affiorante has established itself as one of the most fascinating examples of the Moraiolo variety, but also as one of the most complex and multifaceted oils of the year: cut grass, vegetals, nettle, rocket, balsamic sensations and walnut are some of the aromatic notes that can be distinguished by tasting this evoo.





