

ORINETTA GIANJORIO

A GUIDE TO OLIVE OIL AND
OLIVE OIL TASTING

Learn How to Select, Store and Taste

Olive Oil

with this Simple and Informative Guide

On the cover: *Gustolio* Terracotta: olive oil tasting cups handmade in Italy by Lucia Mancini - *L'Ocra*
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A GUIDE TO OLIVE OIL AND OLIVE OIL TASTING Learn How to Select, Store and Taste Olive Oil with this Simple and Informative Guide © 2012 by Orietta Gianjorio. All rights reserved. No part of this book may be used or reproduced in any manner without permission of the author, except in the case of brief quotations embodied in critical articles or reviews.

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To the love of my life, my husband, Jeffrey.

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Introduction

"Orietta, scegli l'olio per condire l'insalata" (*Orietta, choose the oil to dress the salad*). Since I was little, pairing the right olive oil with our meals was my job. My family understood immediately my love for food, and my curiosity for different aromas and flavors.

I know I'm lucky. I was born and raised in one of the leading countries in olive oil production. In Italy, we produce olive oil and we use it all the time, and not just for culinary purposes. My grandmother had almost no wrinkles and the softest skin I have ever touched, even at 94 when she died. She used a mixture of olive oil, lemon juice and honey for her regular beauty masks. My mom still uses olive oil as a hand lotion and hair moisturizer. And I, a third generation woman from a passionate Italian family, am obsessed with olive oil. I have more olive oil bottles than dresses. Well, almost.

For this reason, when I was asked by the *University of California, Davis Olive Oil Taste Panel* to be one of their members, I was more than flattered. I was honored to be working with such an acclaimed organization, but I was also excited to be introduced to California olive oils.

When I moved from Rome to California five years ago to follow the love of my life, I knew I was going to taste great wines. I had no idea

that this prolific state was also producing remarkable olive oils and receiving more and more attention every year.

In the past few years, I have enjoyed every minute of this new adventure, smelling, sipping and savoring the liquid gold of California.

While embracing with enthusiasm my role as an olive oil taster, I have noticed that this industry is making great progress but consumers are not following as fast. Yes, olive oil sales are growing, and olive oil is now used much more than it was years ago but, as a recent survey published by the *University of California, Davis*¹ shows, consumers don't know how to choose a high quality product. As confused as they are, they probably end up buying *any* olive oil simply because they are told it is “good for you”.

People close to me know how much I disagree with the idea of eating food simply because it is “good for you”. This apparently innocent statement, “good for you”, ignores the concept that food should not only nourish our body, but it should also be psychologically satisfying. Most importantly, this statement allows for a dangerous mindset: “good food” versus “bad food”, and the consequent feeling of guilt when we eat “bad food”. In my opinion, food should never be associated with guilt. A more appropriate feeling would be pleasure.

In fact, I believe that “bad food” doesn't even exist. If it is food (real food), than it cannot be “bad food”.

What is really “bad”, or better unhealthy, is our abuse of portion sizes, our concern for quantity rather than quality, this fast-paced society

¹ Wang Selina, Moscatello Ben and Flynn Dan. *Survey Consumer Attitudes on Olive Oil (University of California, Davis, May 2013)*.

that doesn't allow time for home cooking and savoring, and the food conglomerates with profit rather than people in mind. Associating specific food categories with guilt is not going to fix these issues. But this subject can fill another book.

Back to olive oil. Yes, olive oil is “good for you”, but only *good* olive oil is “good for you”. Poorly produced or inappropriately stored olive oil is no longer a good olive oil, and consequently it is no longer “good for you”. Why? Simply because it never had or it no longer has all the properties that encourage good health.

The problem is that consumers don't know how to pick a *good* olive oil. They are as confused about olive oil today as they were confused about wine thirty years ago.

This confusion may be the result of a couple of issues. First, American olive oil production is new and consumers are still catching up with this industry. Second, there are so many inexpensive and low quality olive oils on the market that consumers have become accustomed to convenience and poor quality.

This is exactly why I have decided to write this book. I hope to be able to clarify the world of olive oil and help consumers reset their palates to high quality standards.

This book is a simple manual to understand the steps of olive oil production and the difference between a high quality and a low quality product. It is a straightforward guide to clarify the olive oil grade system and to help consumers buy, store and pair olive oil with food and wine.

Most importantly, this book is a guide to olive oil tasting. Only by tasting can consumers be empowered to choose a high quality olive oil

with the right health benefits, an olive oil that is actually “good for them”.

In fact, low quality in olive oil shows up as *undesirable* aromas and flavors easy to detect with a simple tasting. These aromas and flavors are considered *undesirable* because they are the sign that something went wrong in one of the stages of the production. An olive oil with *undesirable* aromas and flavors is a *defective* product that never had or no longer has all the proprieties that encourage good health.

For this reason, learning how to taste olive oil and setting our palates to recognize defective products is a must in a world where there is so much confusion and not enough regulation.

Some passages of the book may be a little technical but don't give up on me. Allow me to explain the world of olive oil and olive oil tasting, and you will add more than one benefit to your daily life. By learning how to taste olive oil you will certainly be able to choose a high quality product, but I believe tasting can offer more than just that.

Tasting olive oil could be the beginning of a healthier and, at the same time, more rewarding approach to food. By starting with something as simple as an olive oil tasting, we could learn how to slow down, savor our food, and insert, in moderation, all aromas and flavors in our diet. By regularly involving sight, smell and taste we could also naturally keep in balance our mood and emotions, as well as our immune system response².

² For more information about this concept: Lake, Max. *Scents and Sensuality* (Sidney: Futura Publications, 1989). This book, authored by an Australian MD with a passion for wine, is a good source of medical information about the connection of senses and emotions. Or, Pollan, Michael. *In Defense of Food* (London: Penguin Books, 2008), chapter 7 “Beyond the Pleasure Principle”.

Simply by connecting with our senses at every meal we could do what is “good for us” without a specific effort and with satisfaction.

If you are guilty of thinking multitasking is more important than eating with *gusto*, and food “on the go” is your norm, stay with me throughout the book. Not only will you learn about high quality olive oil but tasting will become a daily activity, and soon you will start allowing yourself all the pleasures of eating, naturally doing what is “good for you”.

The Olive Tree

Olives are the fruit of the *Olea europaea sativa* tree, a domesticated varietal of the wild *Oleaceae* family. According to recent studies, this evergreen and long-lived tree was first domesticated in the Eastern Mediterranean between 8,000 and 6,000 years ago.

Domesticated olives, larger and juicier than the wild varieties, were probably first cultivated at the frontier between Turkey and Syria. After this first cultivation, and with the rise of civilization, domesticated olives gradually spread throughout the Mediterranean³.

The olive tree held great significance for many civilizations. It was not only a measure of wealth, but also a symbol of peace, longevity, prosperity and fertility. Olives were used as currency and as a gift to the Gods. Olive oil was used mainly as lamp fuel but also as medicine and, during medieval times, even as a scalding weapon.

The olive tree is extremely resilient and very adaptable to different climate conditions and soils. To thrive, it needs mild wet winters as well as long, warm and dry summers (a Mediterranean climate). A southern exposure, with a frost-free environment, is also advisable. Calcareous soils (particularly limestone slopes and crags) revealed a more suitable water drainage.

³ Tia Ghose, *Domesticated olive's origins traced to East Mediterranean* (NBC News). <http://www.livescience.com/26887-olive-tree-origins.html>.

Although, the olive tree does well also in terraced orchards or steep inclines, in these locations, drainage, mechanical harvesting and maintenance can be difficult and costly.

The olive tree grows very slowly, but can live for several centuries and remain productive if pruned correctly and regularly. With the right attention and a controlled irrigation (especially in the growing season), the tree will produce each year, generally beginning between the third and fifth year of life.

A few factors could damage the olive yield, the most common are freezing temperatures, hydric stress, fungi and bacteria.

The olive tree blossoms in late spring with clusters of white flowers, and it is wind pollinated.

In the northern hemisphere, fruit set takes place between June and October. During this time the pit hardens, the pulp fills out, and the olives slowly ripen. Six to eight months from the beginning of this cycle, the olives have their maximum oil content.

Olives are harvested at different times according to the intended use, either making oil or curing. For olive oil, harvesting depends mostly on the varietal but, in the northern hemisphere, generally it occurs from October to January (with the peak season in November and December).

Olive Varietals

Exactly like grapes (for example, *Chardonnay* or *Merlot*), olives come in different varietals (or *cultivars*).

Olive cultivars do not determine the quality of olive oils⁴. They simply influence *volatile* and *nonvolatile* compounds:

- * Volatile compounds are components that, because of a low molecular weight, vaporize at room temperature and dissolve in the air (*aromas*).

- * Nonvolatile compounds are heavier components that do not dissolve in the air. One of the most influential nonvolatile compounds is the fatty acid. Fatty acids are responsible for oil stability and health benefits.

Other important components influenced by olive cultivars are phenols, glucosides, chlorophyll and tocopherols. Phenols and glucosides are responsible for the oil's bitterness and, together with the tocopherols, its pungency and antioxidant capacity. Chlorophyll is primarily responsible for providing color to the oil.

⁴ Olive oil quality is influenced by health of fruit and production techniques (from picking to extraction).

Because cultivars influence volatile and nonvolatile compounds, they can potentially produce oils with different aromas and flavors (or *sensory characteristics*⁵). For example, the *Arbequina* cultivar (native to Catalonia-Spain) tends to produce an oil with strong aromas⁶ (ranging from green banana, grass, butter, green almond and floral notes), a soft bitterness, and a low pungency. The *Coratina* cultivar (native to Puglia-Italy) tends to produce an oil with medium aromas (ranging from grass, green almond, and artichoke), a consistent bitterness, and a high pungency.

Besides the genetic of cultivars, olives maturity at harvest also has an influence on the oil. For example, olives picked green tend to produce an oil with herbaceous aromas, strong bitterness and pungency. Olives picked black tend to produce an oil with aromas of very ripe fruit, little to no bitterness and pungency.

A perfect example for this concept is the Italian long-lasting tradition of harvesting the *Taggiasca* cultivar (native to Liguria-Italy) overripe. Because of a late harvesting, this cultivar has traditionally produced a delicate oil with mild aromas, a soft bitterness, and a low pungency. Today, some producers are harvesting the *Taggiasca* cultivar at an earlier stage, creating an oil with herbaceous aromas, a more consistent bitterness, and a higher pungency.

Cultivars, however, should not be our main focus when shopping for a high quality olive oil. Although cultivars are important, the

⁵ *Sensory* (as well as *Organoleptic*) refers to food characteristics experienced by the human senses (sight, smell, taste, and touch).

Taggiasca example shows us that generalizing their sensory characteristics is a risky approach. Lists of aromas and flavors belonging to a single cultivar may take away from the most important factor: a high quality olive oil (one that theoretically can be labeled as extra virgin) is an oil *with a low level of free fatty acidity and without undesirable aromas and flavors*. We will talk more about what this means later in the book. For now, it is important to know that this factor has nothing to do with the unique sensory characteristics of a specific cultivar.

So, cultivars and their maturity at harvest influence many aspects of the olive oil, but what influences a cultivar?

A cultivar's personality varies due to genetics, but it is also strongly affected by irrigation practices and *terroir*. You may be familiar with the concept of *terroir* in wine. This French term summarizes the *geography, geology and climate* of a location

Like grape varieties, some olive cultivars are native (or *autochthonous*) to a certain area and acquire specific sensory characteristics only in that area, because of the distinctive geography, geology and climate (or *terroir*).

With the expansion of olive oil production, a cultivar may have traveled far from its native area. When exposed to a different *terroir* a cultivar may develop completely different sensory characteristics than those expected.

As it happens, some cultivars are more prone to adaptation while others are less likely to give good results if moved from their native land.

⁶ An oil is described to have strong aromas (or an *aromatic profile*) if it is capable of delivering intense and persistent aromas. We will talk more about this concept in the *Olive Oil Tasting* chapters (pages 50 and 60).

Whether in their native land or not, all cultivars will be influenced by the different *terroir* and will give different results according to where they are planted.

Olive Oil Production

Olive oil is nothing more than fruit juice obtained from olives. In the past, this juice was extracted with a *screw press*: a device that applied pressure by turning and pressing three times the paste of olives ground by a round millstone. The *first press* produced the best oil, the second and third only an average oil⁷.

With time, technologies improved and today olive oil is produced by *centrifuging* the paste of olives ground mainly by hammermills.

The goal of olive oil production should be to create an oil with a *low level of free fatty acidity* and *without undesirable aromas and flavors*⁸. In fact, only this type of olive oil is of high quality and has the right health benefits.

In order to achieve this goal, all stages of production should be completed in no more than a few hours, in the most immaculate sanitary conditions and with extreme care.

If *acidity levels* are analyzed in a chemical laboratory, *undesirable aromas and flavors* can be perceived simply by smelling and tasting the olive oil.

⁷ This iconic style may be the reason why some people incorrectly refer to olive oil production as “*pressing*”, and the words “*first press*” still appear on olive oil labels. We will see more in detail labeling myths in the *How to Buy Olive Oil* chapter (page 24).

⁸ High levels of phenols are also preferable as they can prolong the oil shelf life, offer higher storage stability and especially better health benefits.

Undesirable aromas and flavors are considered *sensory defects*⁹. Sensory defects are caused by inadequate harvesting and/or storage of olives as well as inaccurate production and/or storage of olive oil. Sensory defects will lower quality and health benefits of an olive oil. For this reason, if an olive oil has any sensory defects, it will be described as *defective*.

A *defective* olive oil could smell and/or taste reminiscent of stale nuts, old peanut butter, wax crayons, paraffin and play-doh¹⁰. This defect is categorized with the word *rancid*, and it is connected to inadequate storage of the oil (for example, exposure to light, heat and air). A defective oil could also smell and/or taste reminiscent of old decomposing olives, sweaty socks and gym clothes. This defect is categorized with the word *fusty*, and it is connected to olives stored too long before pressing.

In this chapter, we will talk more about the reasons for specific sensory defects. Their smell and/or taste will be extensively addressed and described in the chapter dedicate to olive oil tasting.

For now, let's see how olive oil is produced¹¹ and learn what has the potential of influencing the oil quality and sensory characteristics.

⁹ *Sensory* because they can be experienced by the human *senses* (smell and taste).

¹⁰ These descriptors are not *in* the oil. The oil profile is only *reminiscent* of these aromas. This terminology has been codified by experts to describe the oil profile using recognizable references.

¹¹ The steps of olive oil production described in this chapter may slightly vary from producer to producer.

Harvesting

When to Harvest

In the northern hemisphere, the harvest season goes from October to January. As with any other fruit, choosing the right time to harvest olives depends mostly on ripeness.

Olives mature differently according to:

- * Varietal;
- * Location;
- * Temperature; and
- * Sunlight¹².

Fruit maturity will influence many aspects of oil production, and especially:

- * Oil Yield;
- * Milling and extraction;
- * Sensory characteristics; and
- * Shelf life of the olive oil.

Some of these factors are more predictable than others. In short¹³:

¹² Basically, *olive cultivar* and *terroir*.

¹³ By trying to provide a list of reference, unfortunately I have to generalize some concepts which are otherwise quite complex.

* Olives picked green give a lower yield and contain less oil. Because they are firmer, milling and oil extraction tend to be difficult and mixing the olive paste (or *malaxation*) takes longer. Green olives produce an oil with very high antioxidants, chlorophyll and polyphenols. This oil tends to have a long shelf life. Theoretically¹⁴, it is green in color, and has herbaceous aromas, strong bitterness and pungency.

* Olives picked when their color changes from green to red-purple (or *véraison*) give a higher yield. Because they are less firm, milling and oil extraction tend to be easier and malaxation shorter. *Véraison* olives produce an oil with fairly high antioxidants, chlorophyll and polyphenols. This oil tends to have a medium shelf life. Theoretically, it is light green or straw-yellow in color and has aromas of ripe fruit, only a slight amount of bitterness and pungency.

* Olives picked black give a high yield. Because they are soft, milling and oil extraction tend to be easy and malaxation short. Black olives produce an oil with very low antioxidants, chlorophyll and polyphenols. This oil tends to have a short shelf life. Theoretically, it is gold in color, and has aromas of very ripe fruit, little to no bitterness and pungency.

¹⁴ The word “theoretically” is very important. It would be inaccurate to say that *all* green olives produce green oil with herbaceous aromas, strong bitterness and pungency; or that *all* black olives produce golden oils with ripe fruit aromas, low bitterness and pungency. The oil sensory characteristics are determined by a series of factors and not only by the olives maturity at harvest.

How to Harvest

Harvesting methods have changed very little over the centuries.

Olives can be picked by two means:

* By hand: Olives are individually hand-harvested and placed into bins. Workers may also use poles to slowly beat the branches and pull the olives off into a net. Hand-held electric shakers with vibrating hands may also be used to comb and shake the olives off the braches into a net.

* Mechanically: Tractors use claws to grasp the branches and shake the olives down. Very similar to a mechanical grape harvest, fiberglass rods rotate to shake the olives from the tree.

Letting the olives ripen and fall on their own is also a possibility. However, if the olives are so ripe to fall, they could be damaged and produce a lower quality olive oil.

No matter how the producer decides to harvest, his main goal is to keep the olives intact. Cracking or even bruising the fruit can start an oxidation process. This process will carry through all stages of production, creating a lower quality olive oil. The more carefully the olives are harvested the better the chances to make a high quality olive oil.

From the Orchard to the Mill

After harvesting, the olives are transferred to the mill with extreme care. As in the harvesting process, the main goal of transportation is to not damage the olives.

The sanitary conditions of the mill must be pristine and the olives processed without delay. Olives stored for too long will create a warm environment, an ideal condition for aerobic fermentation to start. This fermentation could lead to sensory defects in the oil (*fusty* sensory characteristics). Olives stored in a dirty and/or humid environment could grow mold, fungi and yeast, also producing an oil with sensory defects (*musty* and *humid* sensory characteristics).

As you may remember, sensory defects are the sign of a low quality product with little or no health benefits.

Defoliation and Washing

Once the olives have arrived at the mill, they are poured into a large hopper with a blower attached. When the olives go through the blower, forced air blows out leaves and sticks. This process is called *defoliation*, and it can be performed also by discs or rotating cylinders.

Leaves and sticks must be eliminated to avoid the development of sensory defects in the oil (leaves could cause an *astringent* or *bitter* taste, and sticks could cause a *woody* taste).

The olives continue on to the washing area, to be washed with water before they are ground into paste.

Washing is very important to eliminate twigs, dirt, debris, small contaminants and pesticides (when used). These elements, if not removed, could be the cause of a sensory defect in the oil (an unpleasant *earthy* taste).

Crushing

At this point, the cleaned olives are crushed and pulp, skin and pits are ground into a paste.

Crushing is also a delicate stage of olive oil production. High temperatures and prolonged exposure to outside air could cause sensory defects in the oil (*rancid* and *fusty* sensory characteristics, or an *astringent* and *woody* mouthfeel sensation).

Today the most important crushing equipment is:

- * Hammermills;
- * Blade Crushers;
- * Metal Toothed Grinders; and
- * Roller Crushers.

Grinding the olives by stones is the most iconic style, but it is also obsolete. In fact, this method renders olives and oil vulnerable to a higher risk factor of developing sensory defects.

Today, technology has advanced and hammermills have replaced the old stone mills. In this process, the olives are crushed and ground by hammers.

Regardless of the equipment used to mill, at this point the olives are a paste.

Malaxation

Malaxation means stirring the olive paste to allow small oil droplets to combine into bigger ones.

This process should last for no more than 20 to 45 minutes. A longer mixing time may increase oil yield, but it has the downside of allowing more exposure to oxygen. Oxygen could cause oxidation and sensory defects in the oil (especially *rancid* but also *fusty* and *winey* sensory characteristics). Malaxation at high temperatures, especially in open malaxors, could also stimulate oxidation and consequent sensory defects in the oil (*rancid* sensory defects).

Malaxation can be performed by:

- * Horizontal or Vertical Malaxors (channel with spiral mixing blades); and

- * Open or Closed Malaxors.

Centrifugation

Once the olive paste has gone through the malaxation process, and oil drops have combined, the producer needs to extract these larger oil drops from the paste.

At one time, oil extraction was performed by a three-times screw press. Today, thanks to a rotating force, centrifuges separate the oil from the olive paste (or *pomace*) and water.

During this stage, temperatures must be kept under control. High temperatures could stimulate oxidation and consequent sensory defects in the oil (*rancid* sensory characteristics).

Centrifugation can be executed by:

- * 2 Phase Centrifuges: The centrifuge separates the oil from water and pomace;

- * 3 Phase Centrifuges: The centrifuge separates oil, water and pomace.

In some cases, the oil may need an additional centrifugation to eliminate any residual of water.

Filtering

Until a few years ago, filtering was considered only an optional step in the production of olive oil. Recent studies have shown that filtering is actually very important. This process can eliminate sediments, waste water, sugars and yeast, drastically contributing to the oil stability and shelf life. Some producers, however, still feel that filtering is not necessary, and that it could remove some components responsible for good aromas and flavors in the oil.

To be beneficial to the oil quality, this step has to be performed properly. Inadequate filtering could cause sensory defects in the oil (*rancid*, or *winey* and *muddy sediment* sensory characteristics).

Among the most important filtering systems are:

- * Polypropylene or stainless steel cartridge filters;
- * Cotton; and
- * Paper Sheets.

Racking

Racking means pouring the oil from the original processing container into cleaned tanks to separate (fully or partially) the oil from its natural sediments.

Racking is an important step of oil production, especially if the producer still considers filtering unnecessary and decides to separate the oil from its natural sediments only by letting it rest before bottling (*separation by gravity*).

If the oil is not racked, it will remain in contact with its natural sediments for too long. This condition could cause sensory defects in the oil (*muddy sediment* sensory characteristic).

After filtering and/or racking, the oil can be placed in tanks for a final separation by gravity and bottled only when needed. Previously filtered oils could also be bottled immediately.