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## **ORGANOLEPTIC ASSESSMENT OF VIRGIN OLIVE OIL**

### **1. PURPOSE**

The purpose of this international method is to determine the criteria needed to assess the flavour characteristics of virgin olive oil and to develop the methodology required to do so.

### **2. FIELD OF APPLICATION**

The method described is only applicable for the classification of virgin olive oils according to the mean intensity of the defects as determined by a group of selected tasters set up as a panel.

### **3. GENERAL BASIC VOCABULARY FOR SENSORY ANALYSIS**

Refer to the standard COI/T.20/Doc. no. 4 "Sensory Analysis: General Basic Vocabulary".

### **4. SPECIFIC VOCABULARY FOR OLIVE OIL**

**Almond** This flavour may appear in two forms: that typical of the fresh almond; or that peculiar to dried, sound almonds which can be confused with incipient rancidity. A distinctive taste is perceived as an aftertaste when the oil remains in contact with the tongue and the palate. Associated with sweet oils which have a flat odour.

**Apple** Odour of olive oil which is reminiscent of this fruit.

**Bitter** Characteristic taste of oils obtained from green olives or olives turning colour. It can be more or less pleasant depending on its intensity.

<b><u>Brine</u></b>	Flavour of oil extracted from olives which have been preserved in saline solutions.
<b><u>Cucumber</u></b>	Flavour produced when an oil is hermetically packed for too long, particularly in tin containers, and which is attributed to the formation of 2.6 nonadienal.
<b><u>Earthy</u></b>	Characteristic flavour of oil obtained from olives which have been collected with earth or mud on them and not washed. This flavour may sometimes be accompanied by a musty flavour.
<b><u>Esparto</u></b>	Characteristic flavour of oil obtained from olives pressed in new esparto mats. The flavour may differ depending on whether the mats are made of green esparto or dried esparto.
<b><u>Flat or Smooth</u></b>	Odour of olive oil whose organoleptic characteristics are very weak owing to the loss of their aromatic components.
<b><u>Fruity</u></b>	Odour of oil which is reminiscent of that of sound, fresh olives, whether ripe or unripe.
<b><u>Fusty</u></b>	Characteristic flavour of oil obtained from olives stored in piles which have undergone an advanced stage of fermentation.
<b><u>Grass</u></b>	Characteristic flavour of certain oils reminiscent of recently-mown grass.
<b><u>Greasy</u></b>	Odour of olive oil extracted in a plant where residues of petroleum, grease or mineral oil have not been properly removed from the machinery.
<b><u>Green leaves (bitter)</u></b>	Flavour of oil obtained from excessively green olives or olives that have been crushed with leaves and twigs.
<b><u>Grubby</u></b>	Characteristic flavour of oil obtained from olives which have been heavily attacked by the grubs of the olive fly ( <i>Dacus oleae</i> ).
<b><u>Harsh</u></b>	Characteristic sensation of certain oils which, when tasted, produce a mouthfeel reaction of astringency.
<b><u>Hay</u></b>	Characteristic flavour of certain oils produced from olives that have dried out and which is reminiscent of more or less dried grass.
<b><u>Heated or Burnt</u></b>	Characteristic flavour of oils caused by excessive and/or prolonged heating during processing, particularly when the paste is thermally mixed, if this is done under unsuitable conditions.

<b><u>Metallic</u></b>	Flavour that is reminiscent of metal. Characteristic of oils which have been in prolonged contact, under unsuitable conditions, with foodstuffs or metallic surfaces during crushing, mixing, pressing or storage.
<b><u>Muddy sediment</u></b>	Characteristic flavour of oil recovered from the decanted sediment in vats and underground tanks.
<b><u>Musty-Humid</u></b>	Characteristic flavour of oils obtained from fruit in which large numbers of fungi and yeasts have developed as a result of its being stored in piles, in humid conditions, for several days.
<b><u>Old</u></b>	Characteristic flavour of oil that has been kept too long in storage containers. May also appear in oils which have been packed for an excessively long period.
<b><u>Pomace</u></b>	Characteristic flavour that is reminiscent of the flavour of olive pomace.
<b><u>Pressing mat</u></b>	Characteristic flavour of oil obtained from olives that have been pressed in dirty pressing mats in which fermented residues have been left.
<b><u>Pungent</u></b>	Biting tactile sensation characteristic of oils produced at the start of the crop year, primarily from olives that are still unripe. It is caused by the action of phenolic substances on the tips of the trigeminal nerve that are spread over the entire mouth cavity.
<b><u>Rancid</u></b>	Characteristic flavour common to all oils and fats that have undergone a process of auto-oxidation caused by prolonged contact with the air. This flavour is unpleasant and cannot be corrected.
<b><u>Rough</u></b>	Characteristic perception in certain oils which, when tasted, produce a thick, pasty mouthfeel sensation.
<b><u>Soapy</u></b>	Flavour producing an olfactory-gustatory sensation reminiscent of that produced by green soap.
<b><u>Sweet</u></b>	Pleasant taste, not exactly sugary, but found in oil in which the bitter, astringent and pungent attributes do not predominate.
<b><u>Vegetable water</u></b>	Characteristic flavour acquired by the oil as a result of poor decantation and prolonged contact with vegetable water.
<b><u>Winey-Vinegary</u></b>	Characteristic flavour of certain oils reminiscent of wine or vinegar. Due mainly to the formation of acetic acid, ethyl acetate and ethanol in larger amounts than is usual in the aroma of olive oil.

## **5. GLASS FOR OIL TASTING**

Refer to the standard COI/T.20/Doc. no. 5, "Glass for Oil Tasting".

## **6. TEST ROOM**

Refer to the standard COI/T.20/Doc. no. 6, "Guide for the Installation of a Test Room".

## **7. APPARATUS**

The following apparatus, which is required by the taster to perform his task properly, shall be supplied in each booth and shall be within easy reach:

- glasses (standardised) containing the samples, code numbered and covered with a watch-glass bearing the same code, kept at  $28^{\circ}\text{C} \pm 2^{\circ}\text{C}$ ;
- profile sheet (see Figure 1), together with the instructions for its use if necessary;
- pencil or pen;
- tray with slices of apple;
- glass of water at ambient temperature.

## **8. METHODOLOGY**

Refer to the standard COI/T.20/Doc. no. 13 "General Methodology for the Organoleptic Assessment of Virgin Olive Oil" and the standard COI/T.20/Doc. no. 14 "Guide for the Selection, Training and Monitoring of Skilled Virgin Olive Oil Tasters".

## **9. PROCEDURE FOR THE ORGANOLEPTIC ASSESSMENT AND CLASSIFICATION OF VIRGIN OLIVE OIL**

### **9.1. Use of the profile sheet by tasters**

The profile sheet intended for use by tasters is detailed in Figure 1 of this method.

Each taster on the panel shall smell and then taste <sup>1/</sup> the oil under consideration, contained in the tasting glass, in order to analyse the olfactory, gustatory, tactile and kinaesthetic perceptions; he shall then enter on the profile sheet provided the degree to which he perceives each of the negative and positive attributes.

Should the taster perceive any negative attributes that are not given on the list, he shall record them under the "others" heading, using the term or terms that most accurately describe the attributes.

## **9.2. Use of the results sheet by the panel supervisors**

The results sheet intended for use by the panel supervisors is detailed in Figure 2 of this method.

The panel supervisor shall collect the profile sheets completed by each taster and shall check the consistency of the degrees of intensity recorded. Should he find any anomaly, he shall invite the taster to revise his profile sheet and, if necessary, to repeat the test.

The panel supervisor shall then enter in the results sheet the number and percentage frequency of the replies given by the tasters and shall calculate the mean intensity of each attribute assessed by at least 66.6% of the tasters. When doing so, he shall award the following numerical value to each degree of intensity:

- none:	0
- slight:	1
- medium:	2
- intense:	3

When no defect is recognised by at least 66.6% of the tasters but the sum of the defects gives a reply  $\geq 66.6\%$ , the highest intensity of the defects assessed shall be taken as the mean intensity.

## **9.3. Use of the classification sheet by the panel supervisors**

The panel supervisor shall note down the grade in which the oil should be classified on the basis of the mean intensity of the defects in conformity with the classification sheet shown in Figure 3 of this method.

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<sup>1/</sup> He may refrain from doing so when he observes any extremely intense attribute, and shall record this exceptional circumstance in the profile sheet.

He shall bear in mind that:

- virgin olive oil is considered to have no defects when at least 66.6% of the tasters perceive their absence;

- virgin olive oil is not entitled to be called "extra" or "virgin" unless at least 66.6% of the tasters perceive the fruity attribute;

- virgin olive oil is classified in the "virgin" grade when the mean intensity of its defects is less than 1.5;

- virgin olive oil is classified in the "ordinary" grade when the mean intensity of its defects is 1.5 or more, but less than or equal to 2.0;

- virgin olive oil is classified in the "lampante" grade when the mean intensity of its defects is more than 2.0.

When analyses are carried out to inspect for compliance with the standard or as check tests, the panel supervisor shall perform the organoleptic assessment of the oil in duplicate, with at least one day in between each test. The mean intensity of the attributes shall be calculated from the set of profile sheet data for the two tests.

**Figure 1**

**PROFILE SHEET**  
(for use by tasters)

	SCALE OF INTENSITY			
	None	Slight	Medium	Intense
<b>PERCEPTION OF DEFECTS:</b>				
Fusty				
Musty				
Winey-Vinegary-Acid-Sour				
Muddy sediment				
Metallic				
Rancid				
Others (specify)				
<b>PERCEPTION OF POSITIVE ATTRIBUTES:</b>				
Fruity				
Bitter				
Pungent				

**Name of taster:**

**Sample code no.:**

**Date:**

**Figure 2**

**RESULTS SHEET**  
(for use by panel supervisors)

**Number of tasters:**

	FREQUENCY OF REPLIES		MEAN INTENSITY <sup>1/</sup> OF THE ATTRIBUTES (assessed by at least 66.6% of the tasters)
	NUMBER	%	
<b>Presence of defects <sup>2/</sup></b>			
<b>Absence of defects</b>			
<b>Presence of positive attributes</b>			
Fusty - Muddy sediment			
Musty			
Winey-Vinegary-Acid-Sour			
Metallic			
Rancid			
Others			
Fruity			
Bitter			
Pungent			

<sup>1/</sup> Degrees of intensity converted into scores:  
none: 0      slight: 1      medium: 2      intense: 3

<sup>2/</sup> When no defect is recognised by at least 66.6% of the tasters but the sum of the defects gives a reply  $\geq 66.6\%$ , the highest intensity of the defects assessed shall be taken as the mean intensity.

Panel supervisor:

Code no.:

Date:



**Figure 3**

**CLASSIFICATION SHEET**  
**(for use by panel supervisors)**

<b>OIL CLASSIFICATION</b>	
<b>MEAN INTENSITY OF THE DEFECTS (MEAN X)</b>	<b>GRADE DESIGNATION</b>
None <sup>1/</sup>	Extra <sup>2/</sup>
mean X < 1.5	Virgin <sup>2/</sup>
$1.5 \leq \text{mean X} \leq 2.0$	Ordinary
mean X > 2.0	Lampante

<sup>1/</sup> Virgin olive oil is considered to have no defects when at least 66.6% of the tasters perceive their absence.

<sup>2/</sup> Virgin olive oil is only entitled to be called extra or virgin if the fruity attribute is perceived by at least 66.6% of the tasters.

**Panel supervisor:**

**Code no.:**

**Date:**