Evaluation of the “Harmony/Balance Value” on the Development of the Sensorial Quality of EVOO—Experiences in Germany and Europe

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Abstract: Since 2015 the methodology of the harmony value in the framework of the official organoleptic assessment has been accredited by the German authorities. It initiated additional background for this parameter which is set on top of the Official Paneltest (Standard IOC/T15/Reg. (EWG) 2568/91 in its actual version) which classifies Olive oil in the relevant classifications “extra virgin”, “virgin” or “virgin lampante”. This study will proof the possible accuracy of this additional parameter “harmony/balance” and the benefits which arise with this additional parameter for all stakeholders. The German Olive Oil Panel (DOP) is practicing this extended methodology for the sensory evaluation of extra virgin olive oil since 2003. In addition to the verification of the category “extra virgin” the Panel is continuously training for additional descriptors used to appraise the quality-discrimination for this category. But in case the panel decides for a valid median of a defect the panel supervisor (PSV) will set the harmony level to zero. In the focus is the additional attribute called “harmony” (in some world areas called “balance”—both mean a quantification of the specific overall quality with one single parameter) which is responsible for this advancement in the methodological approach. Using “harmony/balance” (H/B) as a quality-factor, the discrimination between bad, average, good, very good and premium quality within the category of EVOO became possible. “Harmony” includes olfactory, tactile and kinesthetic stimuli and is evaluated on a bipolar 100 mm scale, which leads to this parameter from “average” in the center to “complex/harmonious” on one side or to “totally disharmonious” on the other side. In the study at hand we are able to prove the development of qualities in the framework of the accredited Panel in German speaking countries over more than 10 years. In this study the development of the increasing quality can be proved in yearly figures of the DOP. The trend could be disturbed however in case of climatological circumstances or orders from outside Germany with over proportional low qualities. The official organoleptic assessment method of IOC/EC separates defect free from defected olive oils and is marking the olive oils with a relevant label of classification (EV, V, Lampant). The additional step to evaluate the harmony value—carried out by the same panel during the same procedure—is quantifying the category of EVOO in relevant quality sectors. This study shows on one side the progress of this method in German speaking countries and their supporting companies. On the other side it revealed the quality problems which arise in markets like the private label/low price (PL/LP) sections in other countries of the European Union. This important market segment covers today about 75%-80% of the market. The IGO study (2015) proved that from 70 samples out of 16 European countries 58.5% (41 samples) have been analyzed as defect; only 41.5% (29 samples) matched the classification EVOO. And from these 29 samples 18 have been evaluated with the additional parameter “harmony/balance” as “lower standard” or “not sufficient”. The long experience with this additional parameter is able to stabilize and quantify the quality of EVOO in favor of all stakeholders.

Key words: Extra virgin olive oil, sensory quality, extension of panel test, complexity, harmony/balance, quantification, private label, Europe.

1. Introduction

Depending on the climatological circumstances the

percentage of EVOO per year in the 3 most important production countries Spain, Italy and Greece is roughly 50% per year [EC statistic, 1998]. The rest is harvested already with chemical or sensory defects and classified as virgin olive oil (VOO), ordinary virgin olive oil (OVOO) or lampant virgin olive oil

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(LVOO). Olive oil is one of the most controlled edible oils in the world and has to undergo its own range of EU Regulations [1, 2]. The olive fruit has to undergo on the way “from the tree to the bottle” many important steps which are able to influence the quality. The fruit itself belongs to a range of far more than 500 different varieties. They differ in size of the fruit, size and kind of the leaves, in ripening, in stone/flash relation, in oil quantity and taste among others. Some varieties are distinguished for table olives only, some mainly for olive oil and some can be used for both purposes. The orchards for the trees today are separated in traditional, intense and super-intense cultivations. The distances between the trees have reduced from 7.50×7.50 m (traditional) over 3.50×3.50 m (Intense) to trellis-like cultivations similar to wine (super-intense). Main reasons for this kind of concentration are more capacity and more mechanical harvesting.

Harvesting is the most expensive part on one side and the in-time-harvesting the most important factor for quality on the other side. A picked olive fruit only can decrease and not increase its quality. Picking the olives by hand still is the only way to harvest about 50% of the fruits because of so much hillside cultivations. Important is that the fruits are not damaged during harvesting and the waiting time before pressing is below 24 hours. The range of pressing requests is from high quantities of olives in a relevant short time up to gaining a special quality—independent of the quantity—with pressing temperatures below 27°C (cold extracted), high amount of polyphenols and an excellent flavor and taste.

Finally all the roughly mentioned steps cause an extremely wide range of different qualities concerning odor and taste, nutrition composition and stability against oxidation. When the oil is ready to be marketed the producers or the cooperatives follow their way of marketing. Depending on the size of the cultivation the producers are taking care for storing, bottling, labeling and marketing by themselves or the

cooperatives are taking over the high quantities of oil. In many cases there exist buyers, brokers and salesmen which sell or buy high quantities to large bottling companies in the producing countries. These companies work for various food chains in Europe and the entire world. About 80% of the EVOO at least in Europe is sold as so called “private labels/low Price” (PL/LP) in discount and large food supermarket chains. For this type of customer blending of EVOO from different quantities, qualities and origin became the most important business.

1.1 Differentiation by Classification Only?

In this phase the question of “supply and demand” and of “quality and price” is arising and needs official regulation. The classification is granted if the chemical analysis (officially 27 parameters) and the very important sensory evaluation called panel test (PT) have passed. The PT is carried out by an IOC accredited panel with 8-12 trained olive oil tasters. It confirms the conformity with the requirements of the Regulation (EWG) 2568/91 in its actual version [1, 2]. Before panels reach the IOC authorization they have to be accredited due to EN ISO 17025 (2005) and need the granted permission by the national authorities [2] and the European Commission. The methodology for the sensory evaluation is defined from the International Olive Council (IOC) [4].

The PT is able to classify the oil from the sensory point of view. Based on the detection of pretended negative attributes as well as positive attributes such as fruity (plus green or ripe), bitter and pungent. Samples which show a median of defects not above zero (= 0) and a median of fruitiness above zero (like 1.0) receive the classification EVOO which is the best possible classification. Another sample which reaches a median of defect not above zero (= 0) and a median of fruitiness like 5.5 will receive the same category EVOO even the difference is obvious. In our eyes it is a weakness of the regulation 2568/91 that all olive oils classified as EVOO belong to just one quality segment

in the sense of the regulation. EVOO is not a consumer food like wine or milk; it is a “food additive” and is able to change many cold, warm or hot dishes to a delicious (and nutritional) adventure. It needs a methodology on top of the classification in form of quantification with a single parameter to discriminate the wide range of taste qualities of EVOO.

1.2 Experiences from Olive Oil Competitions

An adequate approach in order to achieve more differentiation in the category of EVOO we have found in olive oil competitions organized mainly for premium olive oils. But below the top qualities there did not exist any kind of differentiation. Especially in this more inexpensive but highly important mass market section a better differentiation is required. This market is dominated by price competitions and ignoring quality aspects. We assumed quite a percentage of samples which are sold as EVOO and in reality they just belonged to the category VOO because of sensory defects. But for quite some producers this kind of EVOO just was named as “borderline EVOO”. This procedure depends on the requests of local stakeholders and the willingness of supporters. The experiences proved the need of a better differentiation for buyers, blend masters, the trade and consumers.

2. Materials and Methods

2.1 Basic Sensory Evaluation/Panel Test

The IOC defined several guidelines and instruction for the organoleptic assessment which are continuously adapted. They include methodological aspects such as the minimally necessary number of tasters (4, 7, 10-12), the basic vocabulary, the use of the profile sheet, test glasses, booth etc. All details are precisely described in the IOC Standards T15 and Reg. (EWG) 2568/91 in its actual version [1, 2]. As mentioned under 1.2 the result of this PT in the European Union is just for the classification if the oil

is “extra virgin”, “virgin” or “lampante”.

2.2 German Olive Oil Panel

The German Olive Oil Panel (DOP) founded in 1998, was created as an independent control institute in order to prevent the distribution of defective olive oils under the classification “extra virgin”. The DOP is working in a strategic alliance with the “Association for Care and Support of the Value of Extra Virgin Olive Oils e.V. (IGO)” [5]. The IOC supported the founding of this virtually working panel. DOP was recognized by IOC from 2001 till 2005. Since 2007 the DOP is accredited in accordance with EN ISO/IEC 17025 [2]. It is recognized by the German authorities, the European Commission and IOC since 2011. Since 2003 a close cooperation started with the Swiss Olive Oil Panel (SOP) at the University of Applied Sciences in Wädenswil/Zurich (CH) which included the extended organoleptic assessment with the harmony value.

2.3 Extension of the PT with Harmony/Balance

The idea to extend the basic sensory evaluation of olive oil was initiated by the DOP in 2003. The discrimination between olive oils within the category of “extra virgin” needed firstly an extension of the profile sheet (Figs. 1 and 2) in order to sensitize the tasters to special accents of EVOO. Besides the defect attributes which stay unchanged the tasters were focused on more information around the positive attributes and the fruitiness. Especially the differences of odor and taste for the fruitiness as well as the chance to find special aromas and their purity and intensities were trained and the decrease in cases of poorer qualities. For this, many training sessions had to be arranged in order to open the taster’s mind to many more sensory details which have been overgone in the PT.

The methodology for the H/B value [6] includes now the following criteria:

- Relation between olfactife impression (odor) and gustatory impression (taste);

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DOP	Prüfverfahren Profile Sheet (Paneltest + Positivbeschreibung) FS Sensorik	ersetzt FB 04-05 Seite: 1 / 1 Datum: 01.07.2014
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Datum: _____ Prüfer-Code: G _____ Probennummer: _____

Negative Attribute (ortho- und retronasal) * zutreffendes unterstreichen / * underline as appropriate

1 stichig - schlammig* fusty - muddy sediment*	<input type="text"/>
2 modrig - feucht - erdig* musty - humid - earthy*	<input type="text"/>
3 weinig - essigsauer* winey - vinegary - acid-sour*	<input type="text"/>
4 frostgesch. Oliven (nasses Holz)* frostbitten olives (wet wood)*	<input type="text"/>
5 ranzig rancid	<input type="text"/>
6 andere (zu spezifizieren) others (to specify)	<input type="text"/>

☐ metallisch / metallic
☐ erhitzt oder verbrannt /
heated or burnt

☐ Heu / hay
☐ Fruchtwasser /
vegetable water

☐ Olivenfliege / grubby
☐ Espertogras / esparto
☐ roh / rough
☐ Gurke / cucumber
☐ lakig / brine
☐ Schmieröl / greasy

Positive Attribute

7a fruchtig (Nase / orthonasal) fruity	<input type="text"/>
7b fruchtig (Gaumen / retronasal) fruity	<input type="text"/>
8 bitter bitter	<input type="text"/>
9 scharf pungent	<input type="text"/>

	0	1	2	3	4	5	
10 süß süss	☐	☐	☐	☐	☐	☐	Intensität: 0 = nicht vorhanden 1 = schwach → 5 = intensiv (0 → 5 aufsteigend)
11 Aroma / Flavour	☐	☐	☐	☐	☐	☐	
frisch geschnittenes Gras	☐	☐	☐	☐	☐	☐	
grüne Blätter (Olive, Feige, ...)	☐	☐	☐	☐	☐	☐	
Blattsalat (Kopfsalat, Endivien, Rucola)	☐	☐	☐	☐	☐	☐	
Nuss- und Mandelschale / -haut (grün, unreif)	☐	☐	☐	☐	☐	☐	
getrocknete Nuss- / Mandelschale	☐	☐	☐	☐	☐	☐	grün reif
Äpfel	☐	☐	☐	☐	☐	☐	☐ ☐
Banane	☐	☐	☐	☐	☐	☐	☐ ☐
Zitrus / Agrumen	☐	☐	☐	☐	☐	☐	
Trop. Früchte (Ananas, Feige, Melone, ...)	☐	☐	☐	☐	☐	☐	
Beerenfrüchte (Johannisbeere, Erdbeere, ...)	☐	☐	☐	☐	☐	☐	grün/reif reif
Tomate	☐	☐	☐	☐	☐	☐	grün gekocht
Kräuter (Thymian, Oregano, Rosmarin, etc.)	☐	☐	☐	☐	☐	☐	☐ ☐
Artischocke	☐	☐	☐	☐	☐	☐	☐ ☐
andere Gemüse (Kohl, Mangold, Bohnen, ...)	☐	☐	☐	☐	☐	☐	☐ ☐
Tee (schwarz)	☐	☐	☐	☐	☐	☐	
Blüten (floral)	☐	☐	☐	☐	☐	☐	
Honig	☐	☐	☐	☐	☐	☐	
Gewürze (Vanille, Zimt)	☐	☐	☐	☐	☐	☐	
andere (zu spezifizieren)	☐	☐	☐	☐	☐	☐	

12 Gesamteindruck Aroma / Flavour ☐ grün ☐ reif ☐ grün & reif

Gesamteindruck / Ausgewogenheit

13 Harmonie / Komplexität harmony / complexity	<input type="text"/>
14 Dauerhaftigkeit persistence	<input type="text"/>

Aktualisiert: D.Oberg/Bona

Geprüft: QMB

Freigegeben: PL

Fig. 1 Profile sheet for training the harmony/balance value including many tips for aromas and their intensities.

**deutsches
olivenöl panel
dop**

DOP Profile Sheet

Intensity of PERCEPTION OF DEFECTS

fusty (stichig)	_____→
muddy sediment (schlammig)	_____→
musty, humid, earthy* (modrig, feucht, erdig)	_____→
winey, vinegary, acid-sour* weinig, essigartig, säuerlich <small>*zutreffendes unterstreichen</small>	_____→
frostbitten olives (wet wood) erfrorene Oliven (nasses Holz)	_____→
rancid ranzig	_____→
others attributes specify with alternatives	_____→

☐ metallic

☐ hay/wood

☐ grubby

☐ rough

☐ brine

☐ heated/burnt

☐ vegetable water

☐ esparto

☐ cucumber

☐ greasy

PERCEPTION OF POSTIVE ATTRIBUTES

fruity fruchtig	_____→
	___ green/grün ___ ripe/reif ___ green/ripe _
bitter bitter	_____→
pungent scharf	_____→
Harmonie balance	_____→

SAMPLE Temperature in limit 28°C ± 2°C ___ yes ___ no

Serie	Sample Code	Taster code/ Name/ID G	Date	Signature
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QMH FORMBLATT FB-02-06 (PROFILESHEET B) ERSETZT FB 02-05. GÜLTIG AB 01.07.2014

Fig. 2 Official profile sheet for daily use including one additional line for harmony/balance.

- Purity degree and harmony/balance of the positive attributes (fruity, bitter, pungent);
- Diversity, purity and intensity of the aromas and the harmony/balance in between them;
- Complexity of the flavor, persistency and texture of the positive impression;
- Repeatability;
- In case a valid median of a defect is reached the harmony value is set to zero by the PSV.

The detailed profile-sheet with many named possible aromas is used in training sessions only and on request from clients (The SOP is using this profile sheet for the International Olive Oil Award which takes place every year). Since the tasters of the DOP generally remain for years in the DOP the continuous training and practice (more than 700 samples per year) allows focusing all the mentioned criteria on one additional line (Fig. 3) at the end of the official profile-sheet. It is free to the tasters to write remarks beside their definite decision. This means that the taster decides for the classification along Reg. (EWG) 2568/91 in its actual version (or the relevant IOC Standard) and gives finally his/her decision for the value for the H/B.

In the middle of this additional line exists a little mark which shows to the taster the mark “5” which means here around is standard harmony. To the right up to the end (7) are the better harmony/balance values, to the left one finds worse values up to zero which means totally defect.

The idea of this additional parameter is to discriminate objectively and statistically which proved the wide range of EVOO in different quality sections. The method includes as well the following guidelines:

The valid median must have a robust coefficient of variation (CVr) below 10%. Single results which exceed from the median by 1.5 or more have to be eliminated. In case of a panel with 8 tasters only at least 6 from 8 tasters need to have a valid result for the median. The PSV has as well the chance to moderate single results including the value of the harmony/balance. At the end the client can see for every sample its quality level in the range of EVOO and if the result (Fig. 4) fits the requirements of the relevant stakeholder/Distributor.

This process gives buyers and all the involved people a convincing degree of quality, while more than 15 years ago quality was a rather subjective and more emotional expression in the more unknown field of edible oils and especially for a tasty olive oil. The described methodology is building on the international PT Regulation without changing it. In other words, the taster first is deciding all the questions which are part of the official profile sheet. At the end the taster can see his personal decision (EV, V, VL) and decides, in case of EV, the H/B value. As a consequence also the decision for H/B runs into the panel result with 8-12 tasters.

This additional parameter has been evaluated since 2003 for every sample in the framework of the DOP. In many steps till 2012 a slow but continuous process started for increasing the quality, depending on the realization of the stakeholders. The trend to a better quality from year 2013 up to 2017 (Fig. 5) is obvious despite the fact that year 2015 was quite influenced by many evaluations for the European wide selected samples for the IGO study with over proportional many defects and low harmony values. A similar situation

Fig. 3 The additional line at the end of the official profile sheet asks the taster for the decision of the quantification for the overall quality in the sense of the above explanations (which are not be visible).

<i>Harmony Median</i>	<i>Description of category</i>
Set to 0	Median of defect
< 3,0	Not acceptable, defect
3,1 – 4,4	Not sufficient, very poor
4,5 – 5,0	Lower standard / just sufficient
5,1 – 5,4	Upper standard / sufficient
5,5 – 6,4	Good/high
6,5 – 7,5	Very good / very high
7,6 - 10	Excellent

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Fig. 4 Definition of quality levels within the category EVOO. Method DOP-2007-1.

Fig. 5 Quality development with the harmony/balance value in 5 years of total DOP results. 2013-2017 approx. 2700 samples, Source DOP, (2017 provisionaly Jan.-Sept.)

took place in year 2016 with quite some samples from the BeNeLux states which have been analysed by the DOP. But the trend from year 2013 via 2014 to 2017 shows the remarkable changes with a clear decrease of

the very poor qualities with a harmony value between 3.1 and 4.4 and as well in the section of 4.5-5.0 which is called “lower standard”. Standard quality originally reached from 4.5 till 5.4. But since we realized in this

segment about 50% of all the samples we have split the standard quality in lower and upper standard qualities with the consequence that the distributors were concentrating on the upper standard quality.

But the columns show as well a dramatic increase in the section of a good quality (harmony/balance between 5.5 till 6.4) for the first wave of year 2017. This seems remarkable since 2017 was a problematic year concerning the crop in different producing countries.

The harmony/balance value is still unofficial and not part of the EC Regulation but it is permanent in practice in German speaking countries and finds more and more acceptance in supporting companies in the main producing countries.

2.3 The Situation in the Rest of the European Union (IGO Study)

The success in the German speaking countries was able only because the supporter in the producing countries agreed with the conditions of their clients. The IGO now was interested in the situation in many

other countries of the EU. The experiences of Germany should also be of benefit for other countries of the EU. And it should be proved to suggest this method for the overall quality degree to other countries in the rest of the world as well. Publications in various congresses and magazines started in 2011 [6, 8, 9, 11].

For this reason the IGO started the study “Olive oil quality in European supermarkets/discounters”. The study at hand took place during April and September 2015. And 70 EVOO were sampled in 15 different European countries (Fig. 6).

Among them, 58% have been declared as EU Blend, 23% as Spanish, 10% as Portuguese and 9% as Italian blend. All samples did belong to the low price sector in supermarkets/discounters and were labeled as EVOO.

Fig. 6 At least 3 samples up to 7 samples were bought in relation to the importance of each of the 15 European countries; source: IGO study.

The best before dates showed a range between October 2015 and February 2017 which means a durability of 2 years and more for a part of the samples.

3. Results and Discussion

3.1 Experiences from German Speaking Countries

The method was developed as an important parameter for the quality of the category EVOO in the framework of the official PT. Harmony/balance became the decision making parameter in the German market. Today large German distributors and discounters request—with the help of national olive oil experts—tailor made aroma profiles which are used as the benchmarks for the producing and bottling companies in the producing countries. Beside the intensities of the positive attributes the parameter “harmony/balance” plays the most important role. This happens for low price segments (PL/LP) as well as for 100% Greek, Italian or Spanish blends and for PDO/IGP qualities. As a consequence producing and bottling companies have to follow the sensory directions of the distributors for the character of the

blends. In the meantime and after some years of presentations and trainings for the bottling companies and their sensory experts’ cooperation has been born in favor of reasonable qualities. Meanwhile they use services like pre-orientation by panel supervisors (PSV) or the PT for so called mother lots before bottling. As a consequence no bottling takes place before a mother lot (200-500 t) has been released by the responsible controllers. As a consequence there is a remarkable increase of quality in the “private label market” in the German speaking countries (A, CH, D).

3.2 Experiences from Other European Countries (IGO Study)

The 70 samples have been divided to 5 accredited Panels for the organoleptic assessment: (Chemlab of the Ministry of Consumer Protection in Athens (GR); Chemiservice Srl. Monopoli (IT); German Olive Oil Panel; Wessling (DE); Swiss Olive Oil Panel, Wädenswil (CH) and Institute Supérieure de Agronomie, Lisboa (PT)). From the 70 samples only 41.4% (29/70) were confirmed as EVOO, 58.6% (41/70) had to be downgraded to the category VOO (Fig. 7).

Fig. 7 Sensory results per country, IGO study, classification by 5 panels, EU Reg. 2568/91.

This result was caused by sensory defects such as rancidity (24.4%, 10/41). With respect to this almost 50% (20/41) of all defective samples a large part of the samples had a totally unrealistic shelf life of 24 months and more at the time of this analysis. These figures are published without knowing exactly the time which has passed already after the harvest respectively after bottling.

Due to the valid EC/IOC regulations the 26 samples have been analyzed as EVOO, the best possible classification (It is the same classification which receives the winner of an international olive oil competition in a producing country). But if the additional parameter “harmony/balance” is used these 26 EVOO samples are divided into the sections 4% good/high, 38% upper standard, 43% lower standard and 17% not sufficient (Fig. 8). This means that 59% (15/26) of the EVOO in this study have a quality which

is not even upper standard which means not at all a reputation for the product olive oil. Not talking about the 58.6% (41/70) defected samples labeled as EVOO.

3.3 The Chemical Analysis Is Less Helpful for Discrimination

Beside the sensory analysis a chemical analysis was carried out with a near-infrared (NIR) spectroscopy (Figs. 9 and 10) calibrated with more than 5,000 olive oil samples. Altogether only 15.7% (11/70) of all olive oil samples did not meet the official chemical requirements but, as mentioned before, 58.6% (41/70) of all samples showed sensory defects. This fact shows the importance of the sensory analysis on one side but also on the other side that some of the chemical parameters in the Official Regulation (EWG) 2568/91 need an improvement or are to be neglected.

Result 1: IGO-Study, 2568/91

Result 2: IGO-Study, 2568/91 plus harmony value

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Fig. 8 26 samples EVOO (result 1) compared to the same samples quantified by the factor “harmony/balance” with segmentation in the range of ev (result 2).

	Limit	Min	Max	Results	Relevance for Ranking
FFA	0,80 %	0,16	0,58	All valid	poor
K 232	< 2,50	1,59	2,36	All valid	poor
K 270	< 0,22	0,14	0,21	All valid	poor
POZ	< 20 mEq O ₂ /kg	4,60	13,10	All valid	poor
1,2 Diglic.	> 45 til 50	37,80	81,63	1 < 50	High for ev
PPP	< 12	1,30	10,3	All valid	poor

Fig. 9 Standard chemical evaluation for EVOO quality. The chemical data show no significant differences concerning the classification.

	Limit	Min	Max	Results	Relevance for Ranking
FFA	0,80 %	0,15	0,50	all valid	poor
K 232	< 2,5	1,63	2,32	all valid	poor
K 270	< 0,22	0,14	0,24	3 x higher	partly sufficient
POZ	< 20 mEq	6,40	13,10	all valid	poor
1,2 Diglic.	> 45 til 50	36,9	82,0	60% < 50	partly sufficient
PPP	< 12	0,80	14,4	10% > 12	Not sufficient

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Fig. 10 Standard chemical evaluation for the VOO quality. Most of the chemical data are not relevant for the detection of a correct classification (IGO study).

4. Conclusions

Having in mind the long experience with the evaluation of the method since 2003 till today with thousands of samples, having in mind the yearlong practice of the DOP panel (and the cooperation with the SOP) with the methodology DOP-2007-1, having in mind the remarkable changes in quality in the German speaking markets, having in mind real

positive reactions from the side of production- and bottling-companies in the important producing countries, the method and results described above are suitable to be used in combination with the official PT. Moreover it would enable in the level of production and trade the stakeholders to a realistic quality orientation in the range of EVOO for a trusting cooperation.

Having in mind the results from the here described

IGO study it seems that the majority of defects and not acceptable samples could have been avoided by better controlling and by including the additional method for the parameter H/B. Buyers and distributors in all European countries need the possibility of asking accredited panels for organoleptic assessment including the H/B value. It would be a great help for all markets if the authorities would accept this method in combination with the PT. And last but not least, the quantification of the quality with one **serious** single value is also an argument for the price of the oil.

We realized as well during our practice and while presenting the method in producing countries that there was quite an acceptance and understanding in the companies. We realized as well that in the producing countries there is a kind of creeping way which is influencing the producer to some changes in the sector of agriculture over the crop up to the extraction, filtering and storing. This study and the positive experiences in German speaking countries should effort initiatives for using this additional parameter in all evaluations of the organoleptic assessments. Especially the sensory panels of the state authorities, most of them are authorized by the IOC, should be allowed to use this parameter. It will help responsible distributors to increase the quality and to receive tailor made qualities for consumer.

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