International Journal of Research in Agricultural Sciences
Volume 4, Issue 5, ISSN (Online): 2348 – 3997

The Sensorial Characterization of the Most Important Autochthonous Cultivar of Albanian Table Olive

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Date of publication (dd/mm/yyyy): 21/09/2017

Abstract **– Table olive according to the COI International Olive Council norms (COI/OT/NC n1 2004), it has to be yield to the system of transformation in order to be liked by the consumer. The transformation methods are "spanish", "californian" and "natural" or also known as "traditional". The transformation method highly affects the sensorial quality of the product. In Albania is used the "natural" or "traditional" method. This method offers sensorial characteristics to the product (visual, olfactive, exquisite) which differ from the olives produced in other methods. Variety is also an important influence on the source of various sensorial characteristics of olive. The sensorial study of table olive that was transformed with the "traditional" method is made according to this information.**

The study has been made in the Company of Table Olive Production in Cuedari, in the city of Berat, one of the companies that complies.

Keywords **– Albanian Cultivar, Table Olive and Sensory Analysis.**

I. INTRODUCTION

Table Olive should be a really dynamic sector, unlike olive oil, but with one common point - the raw material: olive. We can compare table grape with wine. It is a known fact that every olive cultivator can produce quality olive oil, but it is different with table olive. Table Olive is a new industry in the sense of innovation, but old in the sense of raw material. Table olive has low technical and commercial rates in Albania. The swot analysis and the analysis of table olive production in general, they both show positive tendency of its growth. In Albania, the industry of table olive processing is undeveloped, still in family production levels.

Our country is the country of olive and there is a wide number of cultivars which are used for dual destinations: olive oil and salting, but there are other cultivars as well that only have one destination, the table olive one, such as: "Kokermadhi i Beratit", "Kokermadhi i Elbasanit" etc.

There have been counted almost 10-12 processing factories to table olive, mostly in Berat, Fier etc.

The moderate consumption: 26/100 tones.

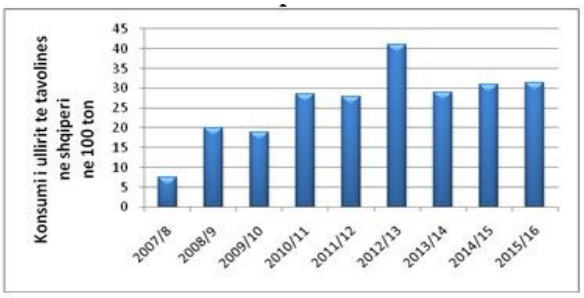


Fig. 1. The consumption of table olive in Albania (COI).

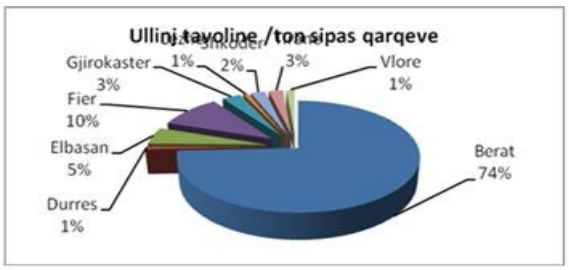


Fig. 2. The production of table olive according to counties (Source: MBZHRAU)

The production of table olive in Albania is focused in Berat, Fier, Elbasan. As we can see from the graphic, Berati reaches 74% of table olive production per tone. Then Fieri follows with 10%, Elbasani with 5%, Tirana and Gjirokastra with 3% etc.

According to the quantity of production in years we can see from the graphic that the trend is growing, especially in 2012/2013, approximately 45.000 tones. The average production in years is 12.000-15.000 tones.

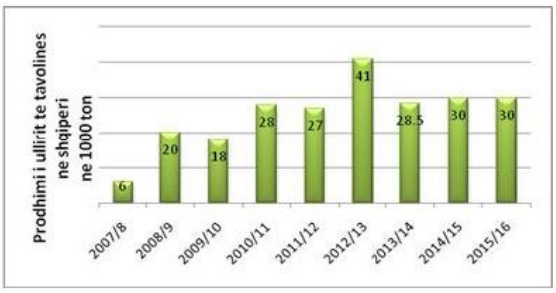


Fig. 3. The production of table olive in Albania (Source: COI)

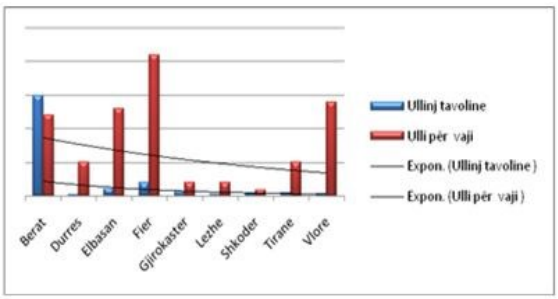


Fig. 4. The production of table olive and olive oil according to counties (Source: MARDWA).

As we can see in the graphic above there is heed in recent years to the growth of olive oil production.

For market needs and requests the import comes from Spain, Greece etc.

The selling market of table olive is located in Tirana,

Berat, Durres, Lezha, from Shkodra to Montenegro, from Kukes to Macedonia and Kosovo.

In Kosovo, Macedonia, Montenegro and Serbia the export rates of this product are low.

Albania's average import of table olive is approximately 3.1 tones.

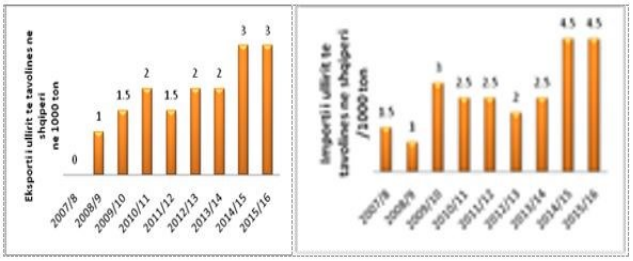


Fig. 5. a) The export) and b) Import of table olive in Albania.

The Cultivars that are used for Table Olive

Through the different inherited genotypes of local cultivars for the fruit's production characteristics and/or for their bio-agricultural behaviour in different areas, the only ones that are used as table olive are those which fit the requests for transformation and that are valued for the typical sensorial and organoleptic qualities of their product.

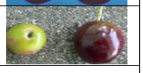
In a conventional way they are divided in two categories:

1. Medium-large fruits only for table olive use, like: "Kokermadhi i Elbasanit", "Kokermadhi i Beratit".
2. Fruits for dual use (olive oil-table olive) like: "Boc", "Krypsi i Krujes" etc.

Olive's Main Cultivars

Down, we have a short description of the agricultural characteristics of some varieties of table olive, for fresh consumption and dual use.

Table I. Description of main olive varieties for table olive.

Table olive cultivars				
Cultivar	Pulp / endocarp ratio	Fruit weight (g)	Percentage of oil (%)	Foto
Kokerrmadh Berati	8.2	4.45	18	
Kokërrmadh Elbasani	8.4	4.49	21	
Double use cultivars				
Cultivar	Pulp / endocarp ratio	Fruit weight (g)	Percentage of oil (%)	Foto
Krypsi i Krujës	6.5	3.97	19	
Boç	6.4	4.31	20-21	

It's difficult to give information about which cultivar is more suitable for cultivation in different areas of our country, regarding the fact that the quality of table olive is a complex variable, that depends not only on the genetic characteristics of varieties and the area of cultivation, but also on the transformation system. There has been an observation about the cultivation of cultivars outside their origins and the results were unsatisfactory. The realization of various comparing tests of amazing table varieties that are known worldwide like "Manzanilla" and "Gordal" have confirmed, in specific testing areas, the validity of local genotypes. (Baron et al, 1986; et al Caruso, 1990; Dettori et al, 1992; Baron et al, 1995; Marone dhe Rotundo, 2002; Ferrara et al, 2003).

The cultivar's requests.

The cultivars with table destination (salting) are not different from the cultivars for olive production (olive oil and/or table olive). They must have:

- Suitability in different pedoclimate zones.
- Fast entrance in production.
- Constant production (not altered)
- Sufficient level of suitability to the application of cultivation techniques.
- Resistance to diseases.

The specific requests that table olive wants are related to the fruit only:

- Fruit's size: average/large;
- Uniform baking;
- Production homogeneity;
- Consistent pulp;
- High correlation between pulp and endocarp;
- Low oil content;
- High sugar content;

Usually, olives for fresh consumption, depend on the size of the fruit. Average size olives are considered 3-5 grams and large sizes over 5 grams.

The average size of the fruit is shown in table 2 (COI COI/OT/NC nº 1).

Table II. Fruits' calibration in 1 kg

60/70	121/140	201/230
71/80	141/160	231/260
81/90	161/180	261/290
91/100	181/200	291/320
101/110		321/350
111/120		351/380
		381/410*

Table olives that are considered qualified for marketing are those with homogeneous size, approximately 60% of fruits.

About the parameters of the fruit quality, is fundamental the correlation between pulp and endocarp which should not be lower than 4 and this corresponds to a percentage of 80% of the pulp that must be consistent and hard. Fruits with correlation equal to 5 are considered "really good" and fruits with correlation higher than 6 are considered "optimal".

Regarding to the fruit's aesthetical aspect, it [the fruit] should be undamaged and untouched by diseases and defects according to the norms COI COI/OT/NC nº 1 December 2004 RESOLUCIÓN Nº RES-2/91-IV/04. Generally, regarding green olives, the most preferred olives in the market are the ones with spherical shape, thin and elastic epidermis, uniform color, resistant to shock and the endocarp should easily detach from the pulp. It is crucial the quantitative-qualitative content of organic acids and pulp's carbohydrates: oil's content should be low, as it affects the consistence of the pulp and the conservation process (Except the cultivars used for 'black' olive).

II. Material and Methods

Table olive "Kokermadhi i Beratit" is harvested in the baking phase with green epicarp. Immediately after the

harvest, the olives are processed with the "Natural" method.

Fig. 6. (a) The factory of the study, (b) Olive grove of table olive's cultivar.

The specification of the sensorial profile is done according to the Norm ISO 8586-2012. The samples were prepared according to the Norm COI/OT/MO nr 1 Rev. 2-2011.

The data is used for the specification of olives' sensorial profile.

III. Results and Discussion

They have been specified according to COI grading, astringency, mushroom aroma, fibrosis, bitter, juicy, flesh, salty, acetic, carousel, croccant and hardness.

Table III. Sensorial profiles

Sensory analysis	
Grading	7
Astringency	3
Mushroom aroma	2.8
Fibrosis	5
Bitter	2.5
Juicy	6
Distaco polpa	3
Salty	5
Acetic	3
Carousel	6.5
Croccant	5
Hardness	5

Being one of the first studies of the Albanian table olive processing industry, it will be developed further with other researching elements in order to convey clearly and completely the attributes of this product.

As seen from the statistics, the "Natural" or "Traditional" transformation method is effective for quality and organoleptic product.

Fig. 7. Sensorial profiles

This study will proceed through the comparison between other table olive cultivars and also, through the sensorial tasting tests of the consumer.

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