

RESEARCH ARTICLE

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Generalizations about the reactions of some genotypes of olive in terms of the treatment with IBA of vegetative cuttings

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Abstract

In this paper are the results of experiments under the treatment with IBA (indol-3 butyric acid) for the autochthonous olive cultivars and the rooting of vegetative cuttings. As regards the dose concentration of IBA, resulted because 4000 ppm dose it gives greatest results for the rooting of vegetative cuttings. But, the percentage of rooting is different for different cultivars. Kalinjot CV has demonstrated greater percentage of rooting that Koker Madh Berati. The vegetative cuttings taken in different positions of vegetative segment (apical, middle, base) with IBA 4000 ppm in normal concentration, are presented to collagenese and changes rooting.

Not be noticed significant changes between the rooting of cuttings in apical, middle and base of sprig after the treatment with hormones. Kaninjot cultivars, Leçino, Ullastra and Mixa have the highest percentage of the rooting. While almost all unresponsive H.Himara with the IBA hormone. This is related to genetic particularities of these cultivars and it is an indication of their diversification. Differences observed over the impact on rooting of the tenure of the cuttings in the solution (5', 10', 15' and 20'). The timing 10 seconds, has achieved the highest percentage of the rooting.

Keywords: keyword; keyword; keyword.

1. Introduction

The Autochthonous varieties are an asset, in the framework conservation, the evaluation and the use of the genetic resources. In particular, these have been for the culture of olive. Some of the autochthonous varieties, were are concentrated in massive plantations, in thousands of hectares in different areas of Albania. Apart from these, there are many indigenous populations which are located in all the areas of olive. These populations represent interest in the direction of research, biological, genetic and morphological, to identify their values. In this context was the object of study with the object of reaction of the the main Autochthonous olive cultivars

versus the optimal dose 4000 ppm IBA, The cuttings in the sprig position and timing of stimulation in fitohormon. The different cultivars they react differently to the doses, of planting time, the position of the cuttings, etc. [5] For seedling fruit trees production and olive trees has entered extensively the use of hormones, as a method which ensures accelerated production and clean in the phytosanitary plan. In this regard extensive use has IBA hormone which provides greater rooting of plant cuttings assenso and in vegetation. [1, 7]

The realization of the such study is theoretical and applicative interest. For the future, study of different doses of IBA for

the rooting is important in the aspect, how react the different genotypes to IBA. The multiplication fitted with the leaf cuttings it is a modern method which today is applied in the industrial nursery-garden [3, 4].

The must be said that the intensification of production connected inseparably with the accelerated production of plant material. Through this method, are multiplied the individuals with high biological value and clean phytosanitary [2].

This research has planned the rooting study for varieties of country, by using hormone IBA. The main research directions:

First, the timing of the rooting (1 Mars dhe 15 shtator).

Secondly, the study and experimentation of the position of the cuttings we segment of the sprig (at the top, middle and base of sprig) [6].

Third, the time of stimulation to the hormone (5 sec, 10 sec, 15 sec, 20 sec),

The main treatments were 4000 ppm, IBA 6000 ppm, IBA 8000 ppm. (see Table 2).

2. Material and Methods(*in two columns*)

Figure 1. The main stages rhizogenesis (left - right), green piece stimulated by IBA, at the bank of rooting and pieces of rooted



The experiments are randomly organized scheme, in three repetitions with 50 pieces received at 50 individuals randomly. It is performed statistical analysis of variance. In this article we would focus only the effect of IBA 4000ppm in the pieces received in different positions of sprigs (apical, middle and base) and timing of stimulation (5, 10, 15 and 20 sec).

Principals Indices; referring randomized scheme, sampling is based: (i) pieces rooted report /planted,

Statistically analysis: The variables of each sample are computerized in the JMP software for: the analyze descriptive, the average, standard deviation and variance of the treatments/variety. After, the descriptive statistics analysis and coefficient of variation, All these, was studied via the UN weighted pair-group method with arithmetic averages (UPGMA) using JMP ver.8.0.3 [8]

3. Results and Discussion(*in two columns*)

In Table 2, the data are obtained effect de l'IBA: (control), 2000ppm, 4000ppm, 6000ppm and 8000ppm) in the ability of rooting of cv Kalinjot, K.M.Berati,

Ullaster, Nisjot and Frantoio. Has resulted, that in March higher percentage of rooting has resulted in the concentration IBA 4000ppm for all the varieties.

Tab.2 The average percentage data on the rooting for five varieties of olive with five concentrations treated with IBA.

Generalizations about the reactions of some genotypes

Treatment	Variety	Kalinjot	K. Madh i Beratit	Ullastër	Nisjot	Frantoio	Means
Control		24.66	5.34	24.00	5.34	21.34	11.86
2000 ppm		68.60	20.60	58.61	16.62	37.34	32.92
4000 ppm		86.65	36.64	78.67	32.66	62.65	47.00
6000 ppm		83.34	32	83.34	31.34	67.34	46.00
8000 ppm		78.66	27.34	67.34	31.34	60.00	40.936
Mean		68.38	24.384	62.39	23.46	49.73	35.74
Std Dev		25.37	12.185	23.53	12.08	19.63	14.46
Std Err Mean		11.34	5.4495	10.52	5.40	8.78	6.47

Burimi i variacionit	Shumat kuadratike	Shkallët lirisë	e	Mesataret kuadratike	F-faktike	P-value	F-kritike
Rreshtat	4239.983	10		423.998	954.092	1.59E-24	2.348
Kollonat	41.29253	2		20.646	46.459	3.04E-08	3.493
Gabimi	8.888	20		0.444			
Shuma	4290.164	32					

In table 3, are reflected all data of experiments for the percentage of rooting per apical cuttings, middle and base of sprig, to 10 varieties of olive.

In table 3, The average data of rooted cuttings in percentage, to 10 olive cultivars

for the apical pieces, middle, and the base of sprig after treatment with 4000ppm IBA, the experiment has been realized in 2014 in Delvine.

Table 3. Data for Analysis of one way Rooting (%) by Variety 10 olive varieties for the study

Variteti	Pozicioni i copës vegjetative		
	maje	Mes	baze
Kalinjoti	90.60 a	82.60 b	80.60 cd
KM Beratit	36.00 n	34.00 o	32.00 p
Bardhi i Krujes	38.00 m	35.40 n	32.00 p
Krips Elbasani	52.60 j	50.00 k	48.00 l
Ullastra	81.40 bc	79.40 d	79.40 d
Nisjoti	35.40 n	31.40 p	30.00 q
I holli Himates	16.60 s	14.60 t	20.00 r
I bardhi Tiranes	64.60 h	63.40 hi	62.60 i
Mixani	70.00 f	68.60 g	64.00 h
Leçino	82.00 b	80.60 cd	78.00 e
Mes	56.72	54.00	52.66

Levels not connected by same letter are significantly different

From this table, we are observing the interesting data. The average percentage of rooting of cuttings for 10 varieties of olive, coming being reduced from the peak to the base of the olive sprig. Specifically, the pieces taken a apical of sprig is 56.72 percent, in mid of the sprig is 54 percent, whereas these, taken on the basis of sprig is 52.66 percent. But this does not appear in

the same way in all the genotypes studied. So, the variety Nisjot, the rooting percentage in the middle of sprig, on top and in the middle of the sprig is about 10 percent. Meanwhile, the Kalinjot variety that is 2 percent.

Table 4: Analysis of variance of the average of rooted cuttings for 10 varieties of the olive in different positions of sprig (top,

middle and base), after treatment with IBA, the period from March to June, in 2014
with the concentration 4000ppm, realized in Delvinë

<i>var</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
Rows	8327.138	9	925.24	256.99	9.2E-10	3.1789
Columns	8.115	1	8.12	2.25	0.1675	5.1174
Error	32.402	9	3.600			
Total	8367.655	19				

According to analysis of the variance (Table 4) were visible significant changes for this indicator from one variety to another. While, between the cutting position on the Sprig (top, middle and bottom), does not have appeared significant changes, but random. The average percentage of rooting of cuttings for 10 varieties of olive, It comes is reduced from the top to the base of olive sprig. The phenomenon is related to the ability of the new cells that have a greater totipotencë than those that grow old. The analysis of variance seen significant changes for this indicator from one variety to another expressed capitalize.

Data on Analysis of Variance for the study of Rooting by position of cutting apical, middle and basis

Source	DF	Sum of Squares	Mean Square	F Ratio	Prob > F
Variety	29	47096.916	1624.0	9.089	<.0001*
Error	60	10.720	0.18		
C. Total	89	47107.636			

The data analyzed resulted validated by comparisons for all pairs using Tukey-Kramer HSD, $q^*3.936$, indicator for Alpha 0.05 For factual F. resulted in greater than theoretical F Prob>F <0.001. This confirmed that the variables of each sample average are different among the olive varieties.

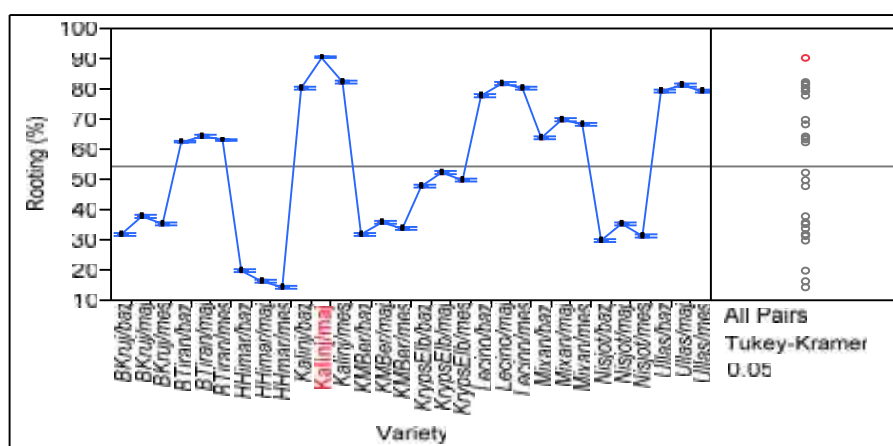


Figure 3. Dendrogram per Analysis of Variance for the study of rooting sipas by position of cutting apical, middle and basis. From these data, we have concluded that the pieces taken to the top of sprig have the greater percentage of rooting, compared with the those received in the middle and especially under the bottom. This apparently, It relates to the ability of the the new cells, which have a greater totipotenc, than those that grow old, with the content of the hormone in different positions of sprig and the formation of callus and passing his specialized tissues, such as the roots.

In table 4, are given the average number of rooted cuttings, for 10th varieties of the olive in

percentage, with the concentration 4000ppm, retention on time in solution (5',10',15' and 20'), realized in the period from March to June 2014 Delvinë.

In Table 5. The average number of rooted cuttings, for 10th olive cultivars in percentagewith the concentration 4000ppm, retention on time in solution (5',10',15' and 20'), realized in the period from March to June 2014 Delvinë.

Variety	The time	The time of stimulating hormone			
		5'	10'	15'	20'
Kalinjot		82	94	90	84
K M Berati		34	36	36	32
Bardhi i Krujës		36	38	34	32
Krip Elbasanit		48	54	48	46
Ullastra		78	84	80	80
Nisjoti		34	36	36	32
Holli i Himarës		14	18	16	14
Bardhi Tiranës		64	66	64	62
Mixan		68	72	68	64
Leçino		80	84	80	80
Mean		53.8	58.2	55.2	52.6

Std Dev	23.7	25.5	24.6	24.7
Std Err Mean	7.5	8.0	7.7	7.8

Referring to the average of 10th cultivars we have noticed: First, the percentage change of the rooting, in different retention time. Specifically, the stimulation 5 seconds, The average percentage of the 10th cultivars was 54 percent, in 10th seconds it rises to 58 percent, in 15 seconds it sits on 56 percent and in 20 seconds it sits significantly in 52 percent.

Secondly, that for different cultivars is considerably different. So for cv Kalinjot this is 82 percent, The Holli of Himara cv, is 14 percent. Others revolve around these two percentages.

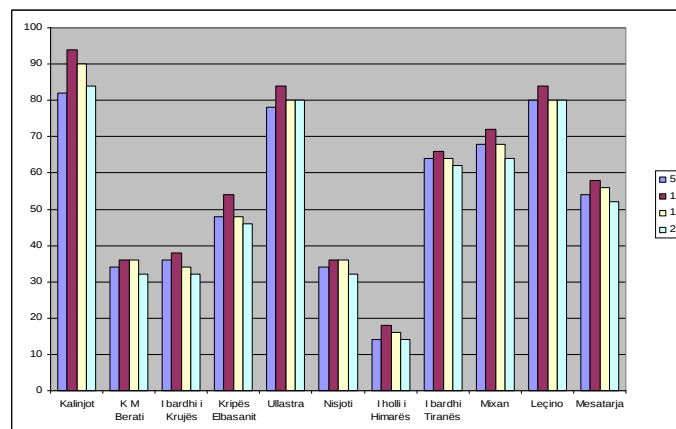
This is an indicator of variation of such variation, which is expressed in other morphological

features, for production, etc. These data are very clearly expressed, in graphical figure 2.

The data of the these tables we found variability between different variants, especially it is more pronounced among varieties. This of course relates to their biological and genetic traits and is an indication of their variability.

From the data of variance analysis, are observed significant changes both in terms of retention time to solution of IBA, and between cultivars.

Table 6: The graphical representation for analysis of the variance of the rooted cuttings for 10th cultivars olive, with the concentration 4000ppm, retention on time in solution (5', 10', 15' and 20'), realized in the period from March to June 2014 Delvinë.



4. Conclusions(in two columns)

- From the data of the experiment results with the place of receipt of the cuttings in sprig and while keeping in the solution for 10 varieties of olive from which 9 local varieties, we have arrived at these conclusions:
- First: Vegetative cuttings received in the different positions of sprig (top, middle and bottom of the sprig) when placed for rooting after treatment with IBA at 4,000 ppm normal concentration, submit changes to associated with the the process of callus and rooting. This indicators shows the variation between these varieties.
- Secondly: There are no significant changes to in the average rooting the cuttings received in top, middle and botom of the sprig, after treatment with hormones.
- Third: Kalinjot, Leçino, Ullastra and Mixan cultivars, They have a higher percentage of rooting. While the holli of Himare cv, almost entirely unresponsive to the hormone IBA. This is related with the genetic features of these cultivars and is an indication of their diversity.
- Fourth, are observed changes related to time in hormon (5', 10', 15' and 20'). The timing 10th seconds of cuttings It has achieved the highest percentage of the rooted

6. References

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