

## **The Effect of Some Growth Regulators, Phenolic Acids and Time of Propagation on the Rhizogenesis of Olive Semi-hardwood Cuttings**

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**Abstract.** Semi-hardwood cuttings 15-cm long of hard-to-root olive (*Olea europaea* cv. Frantoio) were treated with 15 treatments including IBA at 3000 ppm and NAA at 1000 ppm both alone or in different combinations with catechol at 500 or 1000 ppm and cinnamic acid at 500 or 1000 ppm, and the control. The cuttings were collected in spring and fall during 1997 and 1998 seasons from the sub-terminal growth of the experimental trees. The cuttings were rooted in a growth chamber under 3000 lx in 16-h photoperiods at 20- 25 °C and 80-85% RH. Evaluations after 8 weeks revealed that, in general, the experimental treatments caused a significant increase in the percentage of rooted cuttings as compared with the control. Treating cuttings with IBA+ catechol at 1000 ppm yielded the highest rooting percentage (57.8%), followed by cuttings treated with IBA+ cinnamic acid at 1000 ppm (50.9%), while, the lowest percentage of rooted cuttings (17.3%) was obtained in the untreated cuttings. In addition, the rooting percentage of cuttings propagated in spring of both seasons was statistically higher than those collected in fall. This is may be due to the highest rate of cambial activity that enhances the root formation of cuttings in spring more than in fall. Generally, cuttings treated with NAA + cinnamic acid at 500 ppm followed by IBA + cinnamic acid at 1000 ppm produced the highest number of roots (28.8 and 23.9 roots per cutting, respectively) whereas the untreated cuttings gave 6.8 roots. Moreover, cuttings collected in spring of the second season produced significantly higher roots than those propagated in fall. It was also noted that cuttings treated with cinnamic acid at 1000 ppm either alone or in combination with NAA, and IBA + catechol at 1000 ppm gave the longest roots per cutting (14.6, 14.8 and 14.7 cm, respectively) while the control cuttings produced 9.1 cm root length. In addition, cuttings collected in spring of the second season and treated with the different experimental treatments produced significantly longer roots than those propagated in fall. Generally, cuttings treated with NAA + cinnamic acid at 1000 ppm gave markedly thicker roots (1.3 mm) than the most of the other treatments including the control that gave 0.767-mm root diameter. There were no obvious differences in the diameter of roots between cuttings propagated in spring and those collected in fall of both seasons. In conclusion, the primitive effect of IBA and NAA when used in combination with phenolic compounds on rooting of olive stem cuttings might be attributed to the synergistic influence.

### **Introduction**

Olives are among the important tree fruits produced commercially in most of the Arab countries. Due to the nutritional value of the fruits and the ability of the tree to thrive well in many regions of the Arab world concentrate attention has been paid toward