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Effect of Spraying Kalamata and Picual Olive Trees with GA_3 and $ZnSO_4$ on Fruit Oil Content and Oil Properties

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Abstract: This work was performed to study the effect of spraying Kalamata and Picual olive trees with the aqueous solution of GA_3 at (0.0, 20 and 40 ppm) or $ZnSO_4$ at (0.0, 0.5 and 1%) and their companions on fruit oil content and some oil properties. Treatments were applied when fruits reached about two third of their commercial volume shortly before the final swelling stage.

The treatment in which Kalamata trees sprayed with GA3 at 40 ppm coupled with ZnSO4 at 1% gave the highest fruit oil content comparing with the other tested ones and control. Whereas the highest fruit flesh oil percent of the Picual cultivar found in fruits of trees received the 40 ppm GA3 plus ZnSO4 at 0.5 %.The highest oil acid percentage was noticed in fruits from trees sprayed with ZnSO4 at 1%. Meanwhile the lowest peroxide value of the Kalamata cultivar was noticed in fruits from trees sprayed with ZnSO4 at 1% either alone or coupled with GA_3 at 40 ppm , while in the Picual cultivar the oil of fruits from trees received the GA3 at 20 ppm coupled with ZnSO4 either at 0.5 or 1 % showed the lowest peroxide values. Oil extracted from fruits of trees received the two high concentrations (GA_3 at 40 ppm plus $ZnSO_4$ at 1 %) showed the highest iodine value comparing with those of the other tested treatments. Concerning the change in oil quantity and quality of Picual fruits at the two harvesting dates (purple or black stage) it is clear that fruit oil content and oil properties were connected with the picking date. Fruit oil content is known to increase as the ripening stage advances this explains the higher oil content of the black stage compared with the purple one it is also interesting to note that oil properties were also related to picking stage. The purple stage is the proper harvesting stage for producing olive oil of adequate best quality.

Kew words: Olive (*Olea europaea*), Kalamata, Picual, GA_3, $ZnSO_4$, harvesting stage, fruit quality, oil content.

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