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Genetic relationships among and within wild and cultivated olives based on RAPDs

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ABSTRACT. We examined genetic relationships among wild and cultivated olives, which is a very important crop in the economy of the Aegean region. We used RAPD analysis to evaluate relationships among and within 22 olive subspecies from Manisa, Mugla and Izmir provinces in Turkey. Twelve of the subspecies were wild and 10 were cultivated olives. Fifty-two primers were used (OP-Q 1-20, OP-I 1-20, OP-F 14-15-16-17, and OP-K 1-8) and 49 polymorphic bands were selected and used for analysis. The dendrogram based on unweighted pair-group cluster analysis using the Sorensen-Dice coefficient of similarity index indicated two major groups, dividing wild olives from cultivated olives. The patterns of genetic relationships among and within the different olives were analyzed by means of analysis of molecular variance. We found significant differences between wild and cultivated olives (Φ_{st} = 0.1507; $P < 0.001$). In order to determine the genetic relationship among wild and cultivated olives, principal coordinate analysis was used to examine the variation among subspecies. The wild and cultivated

olives formed two main groups, one on the right side and the other on the left side of the principal coordinates graph, respectively. This was compatible with the results we obtained from analysis of molecular variance.

Key words: Wild and cultivated olives; Principal coordinate analysis; Random amplified polymorphic DNA; Genetic relationships; AMOVA; Dice

