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Comparison of similarity coefficients used for cluster analysis based on RAPD markers in wild olives

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ABSTRACT. Five different similarity coefficients (Jaccard, Sorensen-Dice, simple matching, Rogers and Tanimoto, and Russel and Rao) were evaluated and 10 wild olives analyzed with RAPD markers. The influence of the similarity coefficients on wild olives clustering was investigated. Forty-five primers were used on samples from 10 wild olives (Wild 1 and 2 obtained from Mugla province; Wild 3, 4, 5, 6, 7, and 8 from Manisa province and Wild 9 and 10 from Izmir province of Turkey). The similarity matrices obtained from RAPD markers were compared by the Mantel test. Cluster analysis was made with UPGMA dendrograms, and the consensus fork indexes between all pairs of dendrograms were calculated. The Jaccard and Sorensen-Dice coefficients gave the same results, due to the fact that both exclude negative co-occurrences. The dendrograms using the simple matching and Rogers and Tanimoto coefficients were similar; Wild 4 (Akhisar, Manisa) and Wild 9 (Bornova, Izmir) olives had the closest genetic similarities. This occurred because these coefficients include negative co-occurrences. The Russel and Rao coefficients produced different results, because they include negative co-occurrences in the denominator. We concluded that the coefficients that

do not include negative co-occurrences are more efficient for studies of wild olives clustering based on RAPD markers.

Key words: Wild olives; RAPD; PCR; Genetic similarity coefficients; UPGMA

