

Multivariate Analysis and Determination of pistachio Yield Indexes

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This experiment was conducted to determine pistachio yield indexes using multivariate analysis. Several pistachio nut characteristics such as, fresh and dry yield, percentage of blank and un-split nuts, length, width and shell thickness, number of nuts/ounce, protein and oil contents were studied in 28 pistachio cultivars during six years (1992-98) with six replications for each cultivars.

Linear regression analysis between dry weight (Y = dependent variable) and fresh weight (X = independent variable) gave this equation $Y = -18.045 + 0.23X$ with $R^2 = 0.87$. Modelling and stepwise regression analysis between dry weight and the other recorded characteristics showed that the best model is $Y = 826.39 + 0.61X_1 + 41.99X_2 - 20.37X_3 - 28.18X_4$ with $R^2 = 0.977$. The X_1, X_2, X_3 and X_4 variables are determined as pistachio yield indexes and described as fresh weight, nuts/ounce, percentage of blank nuts and percentage of oil content, respectively.

Cluster analysis based on pistachio nut characteristics, grouped the cultivars in 14 separated clusters and analysis of variance revealed that there are significant differences ($P < 0.05$) between different groups in dry weight, nuts/ounce, shell thickness and nut length. The first cluster (Ahmad- Aghai and Badami-Zarand cultivars) and tenth cluster (Harati cultivar) had the highest dry weight and least nuts/ounce, respectively. Correlation coefficients between studied traits showed a positive and significant relation ($P < 0.05$) between dry weight and percentage of unsplit nuts, and between nut length and width. Also a negative and significant relation ($P < 0.05$) was observed between nuts/ounce and nut length, between percentages of kernel protein and its oil content.

system. In this trial the most precocious clone belongs to B21 which started bearing fruit on the second year.

4- The biggest size nuts belongs to Z53 and Z60 with 19.4 and 17.5 gr/nut respectively, however in terms of color of kernel and percentage of kernel, Z60 clone was rated top.