

Morphological and Agronomical Variations among some Date Palm Cultivars Grown in Saudi Arabia Using Principal Component and Cluster Analysis

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(Received 9/1/1420, accepted for publication 12/8/1420)

Abstract. There are insufficient data on the description and the degree of variations among the date palm cultivars grown in the different regions of Saudi Arabia until now. Also, there is interference in the nomenclature of the different date palm cultivars. Therefore, this study was carried out to study the variation among 17 important date palm cultivars in the Kingdom. Sixty-seven characters including 21 vegetative growth characters, 13 flowering and yield characters and 11 fruit properties in three different stages of development and ripening (Kimri, Bisr(khalal) and tamar) were studied. Principal component and cluster analysis were used to identify the degree of similarity and differences among these cultivars.

The data of cluster analysis showed high degree of similarity between all samples of each cultivar, while showed high differences among all cultivars. Cluster analysis revealed that all cultivars were separate from each other, therefore each cultivar came in a single cluster. This means that all studied cultivars are distinguished cultivars. The principal component analysis showed that, morphological characters for leaves and fruits could be used for identification and description of date palm cultivars. Those traits included leaf length, leaf base width, spines length and width, pinnae width and percentage of pinnae base distance were considered the most important vegetative characters and represented 28% from the variance between cultivars. From spathe and yield characters, length and weight of spathe, length of strand, and mean number of flowers on strand represented about 41% from the variance among cultivars. Fruit properties such as, weight and length of fruit represented 26% from the variance.