

Abstract

The prerequisite for suitable pasture management is sufficient information on vegetation. One of the quantitative factors that are used for vegetation management in pastures is plant density. Plant density is estimated by various methods among which the distance methods are one of the quickest and least costly ones. Therefore, the present research studied the five distance methods of nearest individual, point-centered quarter, Diegel's point distance, regular angle, and quartered neighbor, and determined their efficiencies with respect to accuracy, precision and the time required for density measurement of *Periploca aphylla* in the Tang-e Sarheh pastures of Nikshahr. First, three areas of 5000 square meters (50 by 100 meters) were selected in the region where the plant type under study grew and all *P. aphylla* Decne plants in each of the three areas were counted. Five 100 meter sampling lines 10 meters apart were then created in the direction of the dominant slope. Along the length of each transect, 10 points were randomly selected and marked as the study points for the distance methods. Distribution pattern of the studied species was calculated in each of the three areas using the Hopkins and the Eberhart indices. After making sure there were no outliers, comparison of the means using the protected t-test method and the Bonferroni test were performed at the confidence interval of 95% to analyze the data. The t-test was employed to compare the estimated densities obtained with the actual one, and the accuracy of the obtained densities was determined by calculating the relative difference between the estimated density in each method and the control (the error in density estimation in each method). Moreover, the standard deviation was calculated for each method to determine its precision. Results indicated that the regular angle method was more suitable than the others in all three areas with the random distribution pattern if the accuracy criterion was considered, whereas the point-centered quarter method was the best method if the precision criterion was used. However, if the time index was considered, the nearest individual method would be recommended. Finally, if all three criteria were of the same importance, the nearest individual and the quartered neighbor were introduced as the most efficient distance methods for the studied region.

Key words: Closest Individual Method, Point centured quarter, Diggle, Angle order, Distance Method, Plotless



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Shrub Lands of Tangeh Sarhe Region, Niklshahr**

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