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## Investigation on environmental factors influencing distribution of plant species (case study : damghan region of Semnan province)

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**Key words :** damghan region , working unit , vegetation cover type , environmental factors , soil properties , principal components Analysis

**Introduction** The understanding of relationship between plant and ecological characteristics in rangeland ecosystems is very important and it can help the managers to manage the rangelands . Many researchers have proven that plant associations influenced by Environmental Factors such as ,soil characteristics topographic factors , precipitation and other factor in ecosystems(Lents , Ro . 1984 ; Aeraz & Zayed ,1996 ; Bruce ,McCune & James Grace ,2002 ; Zare , 2001 ; Jafari , 2004) The purpose of current study is to investigate the reasons of plant species distribution in association with environmental factors to find the most important governing factors in the relation between vegetation cover and environmental factors .

**Material and methods** The study area includes a longitudinal profile extending from southern slopes of Alborz to Haj Aligholi Kavir of Semnan province . First base maps such as geomorphologic facies , lithologic map and elevation was over layed to obtain working units map . Based on the prepared map and field surveys .10 plots was established in randomized systematic pattern for vegetation cover sampling .distribution of vegetation cover .Floristic list ,canopy cover and density of species were determined in each plot .Furthermore , 5 profiles were sampled within the plots to study soil characteristics in 0-50 cm depth as the effective depth of soil effect on the plant .Consequently , analysis of interaction between soil properties and vegetation cover was conducted by using PC-ORD ( Version4) software based on principal components analysis (PCA) .

**Results and discussion** The results showed that plant type and among environmental factors , elevation , precipitation and slope as the first principal component ( F .P .C ) and percent of sand , loam and ESP as the second principal component ( S .P .C ) explain 39 .29% and 20 .5% of the vegetation cover variation respectively . In addition , the mentioned factors explain 59 .79% of vegetation cover variation in Damghan region . The result show that by using PCA analysis we can able to determine the ecological similarity and difference among plant associations and classified them in similar groups as well . The result of this research in Semnan province Explain that there are very important relationship between plant association and unit work(over layed of geomorphologic facies , lithologic and topographic map) , but in erea that influenced by people application(such as agriculture , intense grazing and . . .) we cannot see very significant relation between this cases because of soil disturbance .

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