Effect of soil physical and chemical characteristic of soil on soil Erodibility by Wind and its zoning. (A Case study of Zahak region).

Abstract

Wind erosion and wind factor are the phenomena that caused severe reformation of environment, change of water and weather quality, threat to the health of society and other social and economical issues in arid and semi-arid areas. It is very difficult to examine what causes such problems due to the vastness of the area and the variety of interfering factors. Factors such as weather, exploitation and land management, soil characteristics, its surface roughness and the area physiographic, each, on their own or with others, intensify the problem of wind erosion. Therefore, the necessity of examining each of these factors or all of them are variant subjects to make it hard to understand how much each of them is effective in the destructive appearance of erosion. In this study, it is tried to study the physical and chemical characteristics of soil and their effects on wind erosion in Zahak. Using the geology maps, topography (numerical latitude models) air photos and field analysis, the area under study was prepared in the form of 11 geomorphologic faces. Due to the homogeneity of the region, all geomorphic faces are sampled to determine the physical and chemical characteristic of soil (texture, structure, clay percent, silt percent, sand percent, moisture, Bulk dencity, Grevel percent, larger particle percent of 0.84mm, organic matter, nitrat, mean weight diameter, $caco_3$, $caso_4$, Na, K, mg, Ca, EC, PH, SAR, ESP, SP). Then, in the same points, sampling, soil wind erosion and wind erosion starting speed were measured in the wind tunnel (Wind Erosiom meter), and through the SPSS 16.0 software, the role and effect of any of soil characteristics on these two factors (soil wind erosion and wind erosion beginning speed) were analyzed. The effect of physical and chemical characteristics was done in the SPSS 16.0. The results of the research showed that the area under study has a high potential of erosion and low wind erosion beginning speed, and the area soil has organic material, low dampness and stability, very light to light context and inappropriate structure. Among all of the natural characteristics of soil, SAR, ESP of the context and structure had the biggest role and effect in the erosion of soil in Zahak. The domain of the physical characteristics includes parameters such as soil stability index (MWD), dampness, percent of grains bigger than 0.84mm and the existing small stones in soil. The highest rate of wind erosion in soil is at the speed of 8m/s at the height of 25cm at the bottom of the tunnel related to abandoned lands, and at the speed of 12m/s at the height of 25cm at the bottom of the tunnel related to sand hills. Lowest velocity on clay hills covered and factor by low distance of sandy hills and most on lakes and streams and released agricultural lands disturbed in last of map velocity of wind velocity soil in Geomerphology in two velocity 8m/s and 12m/s by GIS helped.

Keywords: Wind Erosion, wind tunnel (Wind Erosiom meter), Soil Erodibility, wind Velocity, Geomerphology, Zahak region.

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