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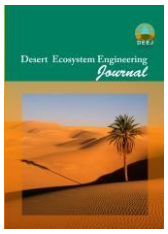

Study of Soil Erodibility Using Geostatistics (Case Study: Province of Kohgiluyeh Boyer Ahmad)

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Abstract

Soil erosion is one of the fundamental issues in the fields of environmental, natural resources and agriculture. Nowadays having knowledge on this topic and related issues have to be considered more and more. It is essential to use new methods instead of traditional methods in order to understand and apply more appropriate planning. The aim of this study is to study erodibility of Boir Ahmad province using soil erodibility factor (K) in relation to some of its effective properties using geostatistical techniques. In this study, 42 soil samples was studied at a depth of 0 to 30 cm with spatial distribution for determining the amounts of fine sand, clay, silt and organic matter, and finally soil erodibility factor. According to the results of spatial distribution of fine sand, clay and organic matter, variogram with Exponential Model and for of silt, Gaussian variogram Model and soil erodibility factor, linear variogram model were the most appropriate variograms. The results of comparing the methods showed that for mapping fine sand, clay and factor of erodibility ordinary kriging and for mapping organic matter and silt simple kriging are the best ones with the minimum error (RMSE). The obtained map showed that the lowest soil erodibility factor was 0.086 in the Northeast and 0.53 in the southwest of the study area. Results of the correlation between the properties affecting erodibility and the soil erodibility factor showed that there is a negative correlation between the organic matter and clay with the erodibility factor (R2=-0/64, P<0/01) and (R2=0/97, P<0/01) respectively and There is a significant positive correlation between the amount of clay and silt with soil erodibility factor (R2=-0/73, P<0/01) and (R2=-0/38, P<0/05), respectively. The results show that the correlation is very high amounts of clay and clay with increasing soil aggregate stability is important for reducing erosion and organic matter increased with increasing aggregate stability and water permeability directly and indirectly has a significant role in reducing soil erosion in the study area.

Keywords: geostatistics, Kriging, soil erosion, erodibility factor, variogram.

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