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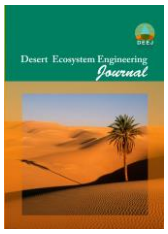

Comparative analysis of soil physico-chemical properties in erodibility of various desert crusts (Case study: hills around Aji-Gol lake Golestan province, Iran)

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Extended Abstract

Introduction: During the past two decades, the attention has been paid to the role of biological crusts in dry and semi-arid ecosystems. According to the roles of soil surface crusts in improving physical and chemical characteristics, and lack of sufficient information on their inherent characteristics, this research can be useful in understanding the mechanism of these crusts.

Materials and methods: The purposes of this study were investigating the physicochemical characteristics, methods of measuring and computing of these characteristics for physical and biological soils crusts (lichens and moss), studying the characteristics of soil erodibility index and their mutual relationship in the around Aji-Gol lake located in Golestan province. In this study, after laboratory operations for determination of physicochemical parameters, the soil erosion index using empirical relationships was considered. In order to compare the physicochemical characteristics of physical and biological crusts (lichens and moss) in surface soil samples, different levels of significance were investigated using environment package of R software. Based on ANOVA, the differences between variables were considered in the three studied crusts (physical, lichen, and moss).

Results: The results of statistical tests for the soil particle erodibility index showed that there was no significant difference between physical crusts–lichens ($P \geq 0.05$), but there were significant differences between the physical crusts-moss and moss-lichens ($P \leq 0.05$).

Discussion and Conclusion: There were no significant differences among physicochemical characteristics of organic carbon content, EC, aggregate stability, sorption and average particle diameter, and moss-lichen crusts ($P \geq 0.05$). With regards to the size particles of the soil texture, there were significant differences among all the particles of clay, silt, and sand belonged to 3 types of crusts (with the exception of moss and lichen in the clay)($P \leq 0.05$).

Keywords: Desert crusts, Soil erodibility, Golestan province.

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