Comparative study of Wind Erosion Potential in the Sistan Agricultural and Non- Agricultural Lands Using IRIFR[1] Models

Abstract:

Wind is major erosive factor in arid and semi-arid regions. Due to Sistan region is a windy region and regarding sand movements and it's adverse effects, it is essential to assess potential of soil erosivity and comparing the results between agricultural and non-agricultural lands.

In this study, we estimate wind erosion potential in non-agricultural and agricultural lands of Sistan region with IRIFR.1 and IRIFR.2**,** respectively. The main objective of the study is to evaluate of land use impacts on soil erosion. First, in the study area different current land uses were separated using GPS, topographic map and satellite images.

After producing agricultural and non-agricultural lands maps, they merged with geological maps. Subsequently, work unit map Iso-potential arable areas was prepared with 11 work units. Results show that minimum and maximum scores of agricultural lands according to the models were 43 and 115 respectively. These scores for non-agricultural lands were 31 and 82. Also average annual erosion in agricultural lands was 2787.55 ton/km^2 (ton per square kilometer), while in non-agricultural lands, it was estimated about 406.99 ton per square kilometer. Since the area of agricultural lands (abandoned and under cultivation) is 15383.75 ha (٪57 of total area) and of non-agricultural lands is 9569 ha (٪38 of total area) , proportion of agricultural lands in sediment delivery is more than that of non-agricultural lands.

Key words: Potential, Wind erosion, Agricultural and non-agricultural lands, IRIFR, Sistan

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