Determination of surface soil properties and estimation of soil loss by wind erosion at Igdir-Aralık (Turkey)*

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This study was conducted on Turkey's second largest wind-erosion-vulnerable area located in the Aralık-Igdir region. Two disturbed surface soil samples (0-10 cm) were randomly taken from each of 48 square plots 12 ha in size. The sample's textures, pH, $CaCO_3$ contents, OM, and EC were determined on fractions >2 mm in size. We determined that collected samples were sandy loam and loamy fine sand, that organic matter contents were very low, lime amounts were medium to high, pH values slightly to moderately alkaline, and EC values were indicative of salt-free status. The erodible soil fraction (EF) was determined by dry sieving with a vibratory sieve shaker and was calculated by applying two different equations. Erodible fraction values were 69.53-99.52% for the direct physical equation (% <0.84 mm) and 31.10-60.50% for the equation that considered OM content. A topographic map of the study area was developed, and surface slopes, roughness, and percent vegetation cover were measured and recorded for each plot. Estimated soil loss was determined with the Wind Erosion Equation (WEQ). Estimated soil loss per ha in unprotected plots according to WEQ ranged between 0-48.18 t yr^{-1}. As expected, the most protected plots were predicted to be not susceptible to erosion by wind, and the high values of percent erodible fraction, low OM values, and scarcity of vegetative cover resulted in high WEQ generated estimates of soil loss.

Key words: Wind erosion, dry sieving, erodible soil fraction, Igdir-Aralık (Turkey).

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