



## **Analysis of shadows related to soil surface roughness as compared to the chain set method and direct measurement of microrrelief**

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Soil surface roughness (SSR) is an excellent index of soil susceptibility to wind and water erosion. Several studies have been developed to characterize SSR based on different methods of capturing the data, amongst them pin meter readings, chain set methodology and the laser scanners. The present study therefore aimed to fill the need for a reliable, low-cost and convenient field method to measure that parameter. Based on the interpretation of micro-topographic shadows, the principle underlying shadow analysis is the direct relationship between soil surface roughness and the shadows cast by soil structures under fixed sunlight conditions. The results obtained with this method at laboratory from different distribution of known altitudes through a surface of 1 m<sup>2</sup> were compared to those obtained from the chain method, in order to facilitate the further comparison at field. The altitudes were simulated with semi-spherical geometric forms. The results showed the differences and error sources of the different methods and validate the comparison at field of both techniques.