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Assessment of soil surface roughness decay at semiarid field conditions using the shadow analysis method

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Soil surface roughness (SSR) is an excellent parameter to assess soil vulnerability to wind and water erosion. Several methods are used to measure SSR depending on specific field and climate conditions. The method based on the shadow analysis has shown to be the most convenient technique to characterize SSR in the field than existing procedures when used in arid and semi-arid regions of Spain. This convenience is due to climate and soil conditions prevailing and low development and maintenance costs and adaptability. Therefore, the present study aimed to assess the SSR decay using the shadow analysis method at field in eight controlled plots of 1 m². The data were collected from beginning of fall 2009 to spring 2010. Half of the experimental plots were covered to be used as control, to avoid influence from wind and water erosion. The rest of the plots were uncovered to assure SSR decay and to evaluate the parameter as the result of the produced erosion. The results showed marked differences among the cover and uncover plots. The parameters demonstrated that the method can be used to study the influence of wind and water erosion on soil at field conditions, although some adjustments must be done on method since it presents some limitations, mainly related to weather conditions when used continuously at field conditions.