Comparing soil surface roughness patterns at different colour and organic matter conditions using shadow analysis method

R. García Moreno, M.C. Diaz Alvarez, A. Saa Requejo, and F. Guerrero López
Universidad Politecnica de Madrid, CEIGRAM, E.T.S.I. AGRONOMOS, Madrid, Spain (rosario.garcia@upm.es)

The method based on the shadow analysis has shown to be one of the most convenient techniques to characterize SSR in the field when used in arid and semi-arid regions. However, the technique has not been proved with soils having more than 3% of organic matter and soil with very dark colours. In order to proof that the technique is able to function at field trials with soils richer in organic matter and with different colours, the project compared SSR resulting in 5 different types of soils after passing chisel. The main variation amongst the soils was the colour, brown soils, grey pale soils and yellow soils and the organic matter associated, 1 to 6%. All the plots measured 1m^2 and were used for crop production. For each site 6 plots were considered and all the data was captured during summer time to avoid the influence of rain.

The SSR obtained varied from 44 to 62% showing that the results were not significantly related to the darkness of colour and the content of organic matter. The variations were strongly related to the amount of clay found on different soils. This difference could be introduced by the difficulty in some cases to pass the chisel when soil is too dried since the acquisition of field data was done after chisel tool was passed on different sites. The parameters demonstrated that the method can be used to study the influence of wind and water erosion on soil surface at field conditions with independence of colour and organic matter properties.