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Soil Surface Variability in Relation to Microstructure

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Soil surface and inner microstructure are highly suited indicators to evaluate most of the physical, chemical and biological processes on soils, and determine the potential for degradation and recovery of soils. Soil microstructure is highly characterised by management practices and erosion processes. For that reason, the relation between surface and inner soil microstructure could determine the degree of potential of soil degradation. To know the influence of management and textural classes on soil microstructure, several measurements where taken determining soil surface roughness (SSR) with shadow analysis method from tilled plots in two different farms belonging to the Plant Breeding Institute of University of Sidney. Soil surface roughness was measured using the shadow analysis method for sub plots measuring 1 m2; taken measurements from North, West and South directions. Further in order to evaluate inner structure, soils samples from the plots were scanned using x-ray computed tomography imaged soil structures with 5 μm resolutions. Samples comprised 2 mm in diameter and 4 mm height. The results showed a great correlation among the soil surface roughness and the pore space and organic matter content of soil core.