

S4: Soil Architecture - poster

## Influence of tillage on soil surface roughness structure and surface porosity

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**Abstract:** Both soil porosity and surface elevation can be altered by tillage operation. Even though the surface porosity is an important parameter of a tilled field, however, no practical technique for rapid and non-contact measurement of surface porosity has been developed yet. On the contrary, the surface elevation of tilled soil can be quickly determined with a laser profiler.

Working under the assumption that the surface elevation of a tilled field is a complicated superposition of the soil terrain profile at a larger-scale and the roughness at a fine-scale, this study included two aspects: (i) to establish an index (Roughness Index, RI) at a fine-scale to associate the surface roughness with porosity; (ii) to check the scaling/multiscaling behaviour among different grid sizes of calculating RI on predicting surface porosity. Consequently, the statistical results from each tilled plot show different correlations between the surface porosity and the defined RI in an early stage (ca. 2 days) after tillage.

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