



Is the soil-plant microbe system self-organized?

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We investigated the origin and consequences of heterogeneous habitats in an arable soil. Using a combination of biochemical and biophysical techniques, coupled with a detailed investigation of the inner architecture of soil (at 4.4 microns and above) using synchrotron radiation, we measured the response of soil structure to high, medium and low levels of biotic activity. Our results show that there was a good correlation between fungal biomass and water repellency, and that in the Rhizosphere, porosity of aggregates, significantly increased, compared to soil not near, or in the presence, of roots. Additionally, the clustering properties of Rhizosphere aggregates were observed to become less random. These results are discussed in relation to the concept of self-organization of soil ecosystems.