



The Impact of Ants on Soil Hydrology, Biology and Chemistry

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Ants are important soil eco-engineers that have a large impact on the soil ecosystem. This is reflected in the alteration of soil properties such as porosity, due to burrowing activities, the accumulation of organic matter and other nutrients in the soil by collected food, altering soil chemistry and (micro) biological processes, by ant species. Important soil properties such as soil structure and aggregate stability are improved by their activity. This directly affects soil hydrology and infiltration properties of the topsoil.

The ant-induced adaptations of the soil have also effects on the ecosystem at a broader scale with respect to surface hydrological processes and ecosystem functioning. One may expect increased infiltration where ant burrows are prominent, but several ant species close off their burrow entrances, whereas other species increase water repellency properties of the soil itself by the accumulation of hydrophobic organic matter, which in turn reduces infiltration. This has consequences for runoff generation and the redistribution of water and nutrients over the soil surface, especially in dryland ecosystems, which are often patchy in nature.

From an ecosystems perspective the local concentration of nutrients in and around burrows and nest cavities may also favor vegetation regeneration. Consequently this could alter the spatial distribution of vegetation and probably also vegetation composition, related to the preference of harvested seeds derived from specific plants. Examples will be discussed originating from different environments and how the ant species involved will affect the local soil properties, also with respect to ecosystem functioning.