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## **Do heavily degraded soil really sequester carbon faster? Can that be change for soil restoration?**

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Soil carbon storage is crucial for global carbon budget and at the same time affect many key ecosystem functions. There are several studies showing that in initial soil substrates and or degraded soils with little overall soil organic matter content have high ability to sequester carbon. Mechanisms that cause this fast SOM sequestration are not completely elucidated but most likely arise from availability of vacant spaces where SOM can be bound by various mechanism and set of positive feedback loops which cause that increase in one SOM pool may increase rate of saturation in other pools. There are also some indication that major mechanisms how the SOM its stored in soil vary along soil development gradient. In Initial soils there may be high rate of SOM sequestration achieved under fast growing plants producing easily available litter, in this stage incorporation POC in mineral matrix, storing microbial neuromas and activity of earthworms play crucial role in SOM sequestration. While in latter stages of soil development, when soil is already close to saturation slow growing plants, producing slow decomposing litter result in higher carbon sequestration, ir seems to be that shift of microbial necromass to fungal rather than bacterial necromass, and difference in litter and microbial necromass decomposability may play important role in this stage. Implication of these finding for ecosystem restoration is discussed.