

I did not imply that all temperate-zone soils are carbon saturated or high in organic carbon; I was only emphasizing the comparatively higher levels of soil organic matter (SOM) and the slow rates of decomposition in the temperate zones compared with those of the tropical soils. Generally, estimates of soil C storage potential are based on the assumption of a linear relationship between C input levels and C stocks. Some soils, however, show little or no increase in SOC stock with increasing C input levels suggesting that SOC can become saturated for C input. Carbon saturation refers to such a limit to SOC accumulation. Its significance is that when C saturation is close to 100%, additional SOC may not result in any additional sequestration. The limit is determined primarily by the silt and clay content of a soil horizon. Saturation is highest (close to 100%) in undisturbed natural systems and lowest in C-depleted soils. The greatest efficiency in soil C sequestration will be in soils farther from C saturation. Thus, C sequestration potential through agroforestry could be high in C-depleted soils of the tropical (smallholder) farming systems compared to those of the temperate zone.

PK Nair